Emerging Technologies in Journalism and Media: International Perspectives on Their Nature and Impact

Editor

John Pavlik

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Editorial

Advancing Engaged Scholarship in the Media Field

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Abstract
Policy makers, industry leaders, and concerned citizens alike all face vexing questions about the changing nature of emerging technology and its impact on journalism, media and society. Research on this topic has never been more critical in the U.S. and around the world. The need is especially acute for engaged scholarship in this domain. By bringing their research into the broader public arena, engaged media scholars can contribute to policy debates, shape industry practices and policies, and enrich public understanding.

Keywords
engaged scholarship; journalism; media; technological change

This thematic issue of *Media and Communication* is devoted to an international examination of the consequences of technological change on media and society. This editorial seeks to articulate why this focus matters. In doing so, it examines why technological change is a crucial area of inquiry in media research and why taking an international perspective is essential.

Media and technology always have been intertwined. Carved in stone or metal, Caesar's *Acta Diurna* of ancient Rome was arguably the world's first newspaper. The use of papyrus as a medium of printed text enabled a more portable form of news and information distribution throughout the Roman Empire. The development of movable type in the 15th century enabled the printing of books and laid the foundation for the Renaissance. The optical telegraph allowed Napoleon to disseminate messages hundreds of kilometers in a matter of minutes via a system of semaphore communications using line-of-sight towers built across France and much of Europe in the 1790s. The invention of steam-powered printing in the 19th century enabled the first true mass communication. Later the advent of photography and moving pictures, the electric telegraph, wireless communication and electronic television enabled new forms of mass me-

dia utilizing voice and image, and a more modern form of public communication emerged. The invention of the Internet, World Wide Web, and a host of digital technologies based on electronic computing and its miniaturization have ushered in even more sweeping changes to the media landscape. The rise of social media, mobile platforms, and artificial intelligence in the 21st century has brought even more change.

It is not a matter of technological determinism. Technological developments by themselves do not necessarily produce changes in the media system. A classic example is the development of 8-track audiotape. In the late 1960s it emerged as a new media format for recording and distribution of audio, music especially, but the advent of the miniature cassette recorder swept it aside.

Rather, the characteristics or qualities of a particular technology have enabled certain media capabilities. But often it has been a matter of how certain innovative people have put those capabilities to use that has shaped the particular media form. For example, New York City publisher James Gordon Bennett was among those who saw the potential in the new steam-powered printing press to reinvent the 19th century newspaper. He and others reimagined the then-elite newspapers of the day to cre-

ate the Penny Press, daily printed products available for one cent to many thousands of readers, and thus give birth to an era of mass media. In the late 20th century, inventors such as Steve Mann and Jaron Lanier envisioned the potential to employ miniaturized digital technologies to design a wearable computer. Today's immersive platforms such as augmented reality (AR) and virtual reality (VR) are the direct descendants of their pioneering work.

Nor is it a simple matter whether the changes that result will be beneficial or detrimental to society. Broad cultural, economic, and political forces and institutions are in a dynamic relationship with how media and those who own or control them utilize new technological capacities. For example, as Carey (2009) has noted, the advent of the telegraph played a key role in the development of modern America.

> In one of the most famous paragraphs of our most famous autobiography, Henry Adams located the precise moment when 'eighteenth-century troglodytic Boston' joined industrial America: 'the opening of the Boston and Albany Rail-road; the appearance of the first Cunard Steamers in the bay; and the telegraphic messages which carried from Baltimore to Washington the news that Henry Clay and James K. Polk were nominated for the presidency. This was May, 1844'. (Carey, 2009)

In the 21st century, the disruption of media fueled by digitization has led to wide-spread economic and journalistic restructuring in the news industry. Many daily newspapers have ceased printing, some converting either entirely or largely to digital distribution, and some have closed operations entirely. Recognizing a fire sale, large publicly traded hedge funds such as Alden Global Capital have become major owners of news organizations (i.e., local newspapers) across the U.S. As of this writing, the hedge fund MNG Enterprises, better known as Digital First Media, has bid about $1.4 billion to acquire the Gannett company, owner of USA Today and local newspapers in 109 markets in the U.S. (Garcia-Roberts, Penzenstadler, Snyder, & McCoy, 2019).

These hedge fund owners are often less concerned with using digital technology in innovative ways to produce quality local journalism, and more committed to producing the greatest financial return for each investment dollar. They often liquidate assets (e.g., reporters) to increase their profit.

Largely as a consequence of these shifts, a recent study shows that there is an expanding news desert in the U.S. (Abernathy, 2018). Some 1,300 local U.S. communities now lack a source of original local journalism. These communities were formerly served by at least one local newspaper. The emergence of digital behemoths such as Google (owner of YouTube), Facebook and Twitter have siphoned off the advertising dollars that once served as the financial foundation of local newspapers. These social-media giants now dominate the adver-

tising marketplace not only in the U.S. but also in much of the world. They do not dominate China, but that country has its own social media and digital giants such as WeChat that increasingly control almost every aspect of the media and communication system.

Technological change continues to disrupt media and society across the globe. The impact is seen in virtually every aspect of life, from the arena of politics and public affairs, to the interpersonal relationships among family, friends and the wider public. Never has the need for research been more acute. The consequences can be seen in at least four broad areas. First, the methods of production, the ways journalists and other media practitioners do their work, are shifting. In just a matter of a few years, virtually every journalist employs a mobile device, for example, in their reporting, whether it is to take photographs or capture video of news events, or to conduct voice interviews, send and receive text messages with sources or editors, or search for information via Google, or navigate to a location, mobile devices are indispensible tools in modern journalism. Second, the content itself of journalism and media is dramatically shifting from traditional forms designed largely for analog media (linear text stories for printed newspapers and magazines, audio or video reports for terrestrial broadcast television and radio) to digital, mobile, networked media. Whether in immersive formats such as AR or VR, downloadable or streaming formats such as video, music or podcasts, textual narratives with embedded clickable links, or interactive audio formats delivered via smart speakers such as the Amazon Echo with Alexa or the Google Home, the on-demand world of media content bears less and less resemblance to the quaint media content of the 20th century. Third, the nature and extent of public engagement in the media sphere is completely transformed. Increasingly gone are notions of a passive audience. In its place is an active, participatory media user who is almost as likely to upload content as download or stream it. Fourth, structural shifts are as profound in the media environment as seismic events in the Earth's volcanic Ring of Fire. Economic transformations, pay media, new content producers such as Netflix and Amazon, are just a few examples. Regulatory shifts are underway, whether in the form of the Federal Communications Commission's dispensing with Network Neutrality, or the European Union's introduction of the General Data Protection Regulation (GDPR). Moreover, the internationalization of media in the 20th century has become much amplified in the 21st century, as many companies, including America-based motion picture producers, now generate as much or more of their revenue from outside the U.S. as within its borders.

Certain topics are especially urgent. Mobile and social communications, artificial intelligence, and data sharing have converged to push privacy concerns front and center. While industry leaders have been focused largely on strategies for innovation and commercial development, critically important questions have remained

unanswered. Among them is what will be the price of privacy? Will the mass public be forced to choose between protecting their privacy and accessing information?

In this context, it is crucial that media scholars design research that is not only reliable and valid but that also helps address the big issues of the day. Society needs such research, that is—the evidence-based intelligence that media scholars are creating as a field. Scholars should consider and articulate the wider implications of their research. It should not be satisfactory to leave the findings of media investigations only on the academic shelf, as important as that may be. It is not nearly enough, not anymore, if it ever was. Academics studying media need to be engaged scholars. As a field, it is essential to ensure media research informs and shapes public understanding of and public policy on media as they develop. From freedom of expression in the digital age, to the role of media in a democracy, to who owns user data in a connected world, legal and policy decisions revolving around the media in all their forms should be informed by the best of media research across the globe.

Media scholars should also bring their research findings to industry. Not only is media research a valuable resource, but it also can help hold industry to a sustainable and credible path.

An historical research footnote is instructive here. In 1972 a report from the Associated Press (AP) revealed to the world the horrifying abuses of the 1932 Tuskegee Syphilis Study (Centers for Disease Control, 2009). Without their knowledge or consent, hundreds of black male research subjects were deliberately infected with syphilis and left untreated. When finally revealed, the lessons from this monstrous investigation informed policy makers and scholars on the importance of the ethical treatment of human subjects of research, and lead to legal, regulatory and organizational changes to ensure those rights would be protected in future research investigations.

In recent years, scholars, policy makers and members of the public learned that Facebook user data have been routinely exploited for economic gain and possibly for political influence and propaganda. These revelations should serve as a digital-age wake-up call for media scholars around the world. Media scholars should commit to conducting research that brings insights beyond the boundaries of the academy and into the boardrooms, newsrooms and production studios of media enterprises around the world. This engagement between media scholarship and media industry is vital to help shape industry practices and culture and ensure they are

not only optimized for innovation and profit, but that they are also held to the highest of ethical standards.

The 20th century journalist Edward R. Murrow (1958) offered this admonishment to broadcast news directors about the then new medium of television:

> This instrument can teach, it can illuminate; yes, and even it can inspire. But it can do so only to the extent that humans are determined to use it to those ends. Otherwise, it's nothing but wires and lights in a box. There is a great and perhaps decisive battle to be fought against ignorance, intolerance and indifference.

In the 21st century, research can be the instrument of media scholars around the world to fight for a more enlightened, ethical, and technologically driven, global media system.

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Conflict of Interests

The author declares no conflict of interests.

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Article

Optimizing Content with A/B Headline Testing: Changing Newsroom Practices

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Abstract
Audience analytics are an increasingly essential part of the modern newsroom as publishers seek to maximize the reach and commercial potential of their content. On top of a wealth of audience data collected, algorithmic approaches can then be applied with an eye towards predicting and optimizing the performance of content based on historical patterns. This work focuses specifically on content optimization practices surrounding the use of A/B headline testing in newsrooms. Using such approaches, digital newsrooms might audience-test as many as a dozen headlines per article, collecting data that allows an optimization algorithm to converge on the headline that is best with respect to some metric, such as the click-through rate. This article presents the results of an interview study which illuminate the ways in which A/B testing algorithms are changing workflow and headline writing practices, as well as the social dynamics shaping this process and its implementation within US newsrooms.

1. Introduction

To stay in business, digital publishers depend on capturing the attention of users. Platforms like Facebook and Twitter use algorithms to surface and curate relevant content that drives user engagement. While often not as sophisticated, news organizations have also started incorporating data and algorithmic systems into their editorial workflows to optimize stories and capture reader attention. Such approaches are used in a variety of ways to optimize attention and traffic, including predicting article shelf-life, selecting and timing postings to social channels, and integrating recommendation and personalization modules to make sites more sticky. The integration of data and technology reveals new ways in which journalists respond to reader preferences. Audience influence has long been a factor in shaping journalism: news-

papers used readership research to decide where they should increase coverage, and journalists received direct feedback in the form of mail and phone calls (Beam, 1995; de Sola Pool & Shulman, 1959). With the shift to digital, the task of constructing an audience has become increasingly quantitative, with analytics systems collecting feedback in the form of data (Zamith, 2018).

This article examines a specific technical approach that shapes the optimization of content by way of audience feedback: A/B headline testing. In particular, this research examines how headline testing is being taken up by news organizations and what its impacts are on headline writing. While many analytics and optimization tools influence journalism, headline testing plays a central role in shaping story presentation. By focusing on headline testing as a newsroom process, we illuminate how technology shapes a key component of publishing

and how different actors orchestrate its impact as part of a sociotechnical system. The crucial function headlines play in attracting attention to online news and the number of different newsroom roles that touch the testing process make headline testing well-suited to observing how technical, organizational, and editorial dynamics interact in media organizations. In this study, we offer findings from one part of those interactions, that of the newsroom workers who oversee and implement headline testing. By focusing on this group, we uncover an important perspective on an understudied practice.

To conduct our study, we undertook semi-structured interviews with 10 media industry professionals occupying a range of roles in headline testing and optimization processes. Using a grounded theory approach to analyze transcribed interviews, we develop a conceptual treatment of the social context of A/B headline testing within newsrooms and its role in shaping news headline writing. We find that newsroom workers frame A/B testing as a way to pursue "better" headlines by discovering and reinforcing headline writing best practices, to the extent that publishing contexts and the testing tool allow. We also detail how the social dynamics of the newsroom––which depend on established newsroom roles, productive communication, and credible influence—affect the headline testing process. In our discussion, we incorporate an actor-network theory (ANT) frame for examining the interplay between technology and newsroom workers exposed in our results. ANT considers the relationships among human actors, technical actants, and other objects, and the behaviors that emerge from those relationships, offering a way to understand the relationships between the human and non-human influences both within and outside the newsroom (Lewis & Westlund, 2015). We reflect on the mediating role of actors in the sociotechnical system, the implications of organizational scale for adoption, and discuss limitations and opportunities for future work in this domain. Taken together, these findings advance understanding of the newsroom dynamics surrounding the adoption and integration of headline optimization into newsroom practices.

2. Related Work

As digital media has evolved out of print practices, we consider two key changes that have affected how newsroom workers package and distribute their stories. First, audience analytics exert influence on journalists and their priorities. Second, tools designed to distribute or monitor content have changed workflows in the newsroom. By examining how newsroom workers are using new tools that track audience data to optimize headlines, this research sits at the intersection of these trends.

2.1. Audience Analytics

The growing influence of technology on journalism has shifted the relationship between the press and its audi-

ence, from unilateral, asymmetrical communication to "a dialog between the press and the public" (Pavlik, 2000, p. 235). With that dialogue have come new forms of incorporating audience feedback. Without the audience's active participation, journalists can indirectly observe and make inferences about reader behavior, extracting patterns of readership to inform publishing decisions (MacGregor, 2007). Readers generate user data by their actions online, making them meaningfully measurable (Assmann & Diakopoulos, 2017). Their data now informs many aspects of assigning and distributing stories, including shaping headlines (Jenner & Tandoc, 2013). That data manifests in the form of common metrics, often conveyed through third-party analytics services. Metrics like pageviews and engaged time serve as currencies, assigning value to interactions and transforming the industry around them (Nelson & Webster, 2016). The impact of those currencies depends on how central a newsroom makes audience analytics, in terms of visibility, prioritization, and utilization in the journalistic process (Petre, 2015). It also depends on structural factors—such as analytics systems, the sophistication of which vary by newsroom—and the newsroom workers whose labor interacts within that structure (Cohen, 2018; Nielsen & Cherubini, 2016).

While the tools for collecting audience feedback have changed, concerns about incorporating that data into the journalistic process remain. Critics of newspaper audience research saw it as a way to "pander to readers," rather than focusing on the information they needed (Beam, 1995, p. 28). More direct audience involvement in producing stories has spurred new anxieties. Tandoc and Thomas (2015) warn that web analytics can segment audiences into ever-narrower groups, eliminating the common ground where civic discourse takes place. There is also evidence that journalists' news judgment is eroding as a driving force behind production and distribution: Lee, Lewis and Powers (2014) found that audience data decides how prominently stories get placed on homepages more than editorial judgment does. And in some cases, reader data is used without the mediation of any editorial judgment, as in the case of "most read" lists (Lee et al., 2014). This shift can cause tension between the stated, traditional values of a newsroom and the pressure to incorporate reader data (Anderson, 2011). Metrics can also have a deep emotional effect on journalists and can decouple the goal of producing traffic from that of writing a high-quality story (Blanchett Neheli, 2018; Nelson & Tandoc, 2018). As Nielsen and Cherubini (2016) acknowledge, important signifiers of success and quality, like the public impact of a piece of reporting, won't be reflected by editorial analytics. This research aims to interrogate these tensions in the context of newsroom A/B headline testing, which tightens the feedback loop between audience data and the algorithmic (and at times semi-automatic) optimization of that audience data.

2.2. Newsroom Technology Adoption

At an organizational level, resources and culture shape the adoption of technical tools. Since adoption processes impact the effect that technology has on the editorial workflow, they are important for understanding why technology is used in different ways in different newsrooms (Boczkowski, 2004). One driver for adoption is financial, as large quantities of audience data allow for more precise targeting by advertisers (Tandoc, 2014; Thurman, 2011). A lack of financial resources can also dampen the use of analytics technologies. Companies without the means to hire specialists must utilize the tools already available to them. Many journalists who use web analytics in their work learn how to do so informally, and those who enter audience engagement often come from roles that were eliminated or made obsolete (Assmann & Diakopoulos, 2017; Tandoc, 2014). Separate from available resources, organizational priorities and dynamics also determine how tools get used. While some organizations use web analytics as a primary driver in editorial decision making, others limit the use of and exposure to audience data in the newsroom (Anderson, 2011). Those relative prioritizations manifest themselves in tools and in support structures (Nielsen & Cherubini, 2016).

At the receiving end of those pressures are individual journalists, who must go through the negotiation of adopting new technology while maintaining their traditional roles and responsibilities (Tandoc, 2014). Journalists see data as a more objective source of feedback than other methods, one that increases editorial efficiency (MacGregor, 2007). In a 2013 survey of journalists, 90.5% said that reader data "have helped them serve the audience" (Jenner & Tandoc, 2013). A positive attitude is especially prevalent in those who focus primarily on what the audience wants, or who tie increased readership to economic gain (Vu, 2014; Zamith, 2018). Journalists with more traditional conceptions of their gatekeeping roles feel a strain between the value of news judgment and the push to use data in the reporting process (Anderson, 2011).

While engineers have blogged about in-house systems used for multivariate headline testing (Arak & Kentaro, 2017; Muralidhar, 2016), and editors have circulated guidelines for writing effective headlines (Gessler, 2016; Rayson, 2017), neither camp of practitioners addresses the individual and organizational factors this research is concerned with. In most cases, the popular and scholarly literature only mentions headline testing as an existing practice in digital newsrooms, failing to delve into the specific details of how the practice changes headline writing, editorial and ethical thinking, and organizational perception (Christian, 2012; Kuiken, Schuth, Spitters, & Marx, 2017; Reisman, 2016). This research aims to fill this gap by examining how the technology of A/B headline testing is being adopted and integrated into newsroom practices.

3. Methods

We conducted a qualitative study consisting of semi-structured interviews with editorial and strategy staff in newsrooms practicing some form of headline testing, as well as product staff and a third-party vendor that supplied A/B testing tools. We recorded and transcribed each interview and used those transcripts as the basis for a grounded theory approach to data analysis (Glaser & Strauss, 2009, pp. 21–43).

3.1. Participants

After IRB approval was obtained, participants were recruited using three strategies. First, we identified news organizations that use A/B headline testing by searching for blog posts that detailed these processes. In addition, we looked at homepage source code for evidence of sites using headline testing. We then sent recruiting emails to the individuals at those organizations whose LinkedIn profiles indicated that they were most likely to be involved in the headline testing process, in roles such as audience development, homepage production, or analytics. We recruited five participants with this method. Second, we created a survey form that potential participants could fill out with their contact information and shared it on Twitter and to targeted digital media industry groups on Facebook and Slack. We contacted respondents who self-identified as media company or third-party vendor employees. This method brought four more participants. Finally, we utilized snowball sampling, asking each participant for recommendations of further potential interviewees. We recruited one additional participant this way. Opening up recruitment to self-nominations via social media and to snowball sampling allowed us to reach relevant individuals who were outside our initial preconceptions of who might be involved in headline testing within news organizations.

After contacting 32 newsroom workers in relevant roles, we recruited and interviewed 10 participants for this study, representing a mix of perspectives from audience development, social media, editorial, product, and marketing staff. We noticed similar responses around the fifth interview and reached theoretical saturation after the seventh. Three more interviews after this point confirmed our findings. Participants provided a cross-section of the digital media landscape, as representatives of legacy news organizations (N = 3), established digital publishers (N = 2), smaller topical blogs (N = 2), and larger industry- and interest-specific digital outlets (N = 2), as well as a third-party vendor (N = 1). Of the news organizations represented by participants, five had formal testing systems in place. Three newsrooms used informal approaches to headline optimization devised by the organization, and one was in the process of building out headline testing capabilities. Seven of the participants were women, and three were men.

3.2. Materials

Our interview script consisted of 14 questions, with several potential follow-up prompts for each. We developed the script by reviewing existing literature on the adoption of technical tools in newsrooms and journalists' perceptions of their audiences. Topics for each interview included participants' background, general headline writing and testing processes, takeaways from headline A/B tests, the technical tools used in these processes, and ethical concerns around headline testing. Since our participants came from different roles and perspectives within each organization, the semi-structured interview approach allowed us to tailor interviews to each participant's expertise through unscripted follow-up questions.

3.3. Procedure

We conducted audio-only interviews in August and September 2018 in English via Skype. Interviewees received information about participating in the study via email ahead of each call, and we obtained consent verbally. Calls were recorded for transcription purposes. The median interview length was 52.5 minutes (max = 60; min = 22). No monetary incentive was provided to participants.

3.4. Data Analysis

We transcribed each interview immediately after completion. We then used key excerpts from the interviews as the basis for an initial low-level coding of the data. These codes were grouped into larger categories, an iterative process that then informed future interviews. As new data became available after each interview, we used a grounded theory approach to further build out and layer categories, with the ultimate goal of developing core categories and ensuring our analysis was well-integrated with the data (Glaser, 1965).

4. Findings

Two overarching areas of focus emerged from our analysis. The first revolves around headlines themselves, detailing the technical nature of testing tools and how they interact with headline writing best practices. The second looks at the social dynamics surrounding headline testing, which play an important role in determining how effective the process can be in a newsroom. Both highlight the context-dependent nature of headline testing.

4.1. Pursuing Better Headlines

The goal of A/B headline testing in all cases was increased traffic to stories. Participants stressed that they wanted to accomplish this goal by improving the quality of headlines, as judged by how well they communicated the contents of the story and adhered to the publication's

style and tone. Markers of quality were communicated by way of established best practices, articulated as components of institutional preference and personal experience in digital media, and informed over time by the results of headline tests. The perceived connection between headlines that conformed to editorial understandings of quality and headlines that drew in more readers created a largely harmonious testing process in participants' newsrooms. However, there were points where considerations of quality and traffic diverged, sometimes leading to tensions around the definition of a "better" headline in those otherwise neat priorities. To the extent that it was technically feasible, newsroom workers also incorporated their understanding of various contexts a headline could appear in, such as social media or search results, into evaluating quality.

4.1.1. Tool and Testing Mechanics

A/B headline testing systems work by showing different portions of a site's audience different headlines for the same story. To run a test, potential headline options (often between two and five) for a story are typically written by a writer or editor and loaded into the testing system. During the test, when a user visits a designated part of the site (usually the homepage), the system serves them one of the headlines. This process often continues until the test reaches statistical significance (i.e., one headline can be confidently declared better with respect to the optimized metric, such as clickthrough rate). The system then reports how headlines performed according to the optimized metric. Some systems automatically begin showing all users the winning headline, while others report data on test results and leave the decision of which headline to display to newsroom workers.

There were no drastic variations in how organizations approached headline testing. While some formal systems were third-party tools and others built in-house, they all provided the same testing functionality. Three participants only had access to informal headline testing or optimization approaches. In these cases, they manually made adjustments to the canonical headline of the story. They focused on stories that were underperforming and monitored performance before and after a change to gauge its effectiveness. Whether or not a formal testing system was present in the newsroom didn't correspond with any specific kind of organization.

4.1.2. Toward Best Practices

Participants talked about a variety of headline writing best practices. These ranged from specific, mechanical rules around headline construction (e.g., including salient quotes and numbers, starting explanatory headlines with "how" or "why," referencing important people and organizations by name, and using relevant SEO terms) to more subjective ideals (e.g., highlighting the smartest angle of a story, conveying a story's importance

and timeliness, maintaining a conversational tone, and matching the publication's style). There were no contradictions in what constituted a best practice between newsrooms, suggesting the emergence of a consistent set of data-driven beliefs about headline writing.

The best practices described above were largely revealed or affirmed by headline tests. Tests often contain the same core idea approached using different formulations, as in an example from the *New York Post*, which tested five headlines, including "Is watching porn harmful to your health?," "You'll never guess how much porn Americans watch," and "This is what porn does to your brain" (NY Post Poetics, 2017). These kinds of tests pit different styles and approaches against each other, over time revealing patterns of continued success that grow to define best practices. In uncovering those best practices, then, the emphasis was on taking a longer-term view. This meant cutting back on headline testing over time, driven by a couple factors. First, there was a concern that frequent A/B testing was optimizing at too granular a level, obscuring findings that could be applied more broadly. To combat this, several participants were starting to exercise more discretion over how often tests were run and for what purpose. For example, one participant had a number of long-term questions (e.g., how straightforward a headline should be, or how long) and only selected tests that could contribute to answering those questions. Second, uncovering the answers to those long-term questions naturally led to a reduced need for testing. Best practices remained stable once they were uncovered, meaning headline testing provided diminishing returns.

Headline testing was also mentioned as a training tool, something that taught writers about what works and kept headline writing front of mind. As one participant elaborated:

> It is kind of about the data but it's equally about training junior writers to have stronger angles and write better headlines before they even start writing a story. Generally what wins for us is what's smart and what has an interesting opinion, and that can be hard to train in a junior writer. So if you're working with people on headline alternates, if you're showing the data about what succeeds or fails, that helps train a whole newsroom over time to get better. (Interview, August 9, 2018)

Participants again framed headline testing as something to advance the goal of more traffic, often eliding any explicit mention of a connection between traffic optimization and a tension with ethical normatic considerations. Eight of the participants expressed an aversion to headlines that constituted clickbait or information gapping, the practice of withholding key information in order to get people to click on a story. They described a shift away from these styles in response to audience backlash and toward a more straightforward approach. But because of

this characterization of clickbait as a trend of the past, participants seldom reflected on how it might be incentivized by the traffic-oriented focus of headline testing. Rather, they focused on the importance of editorial oversight in the process as a way of ensuring the quality of headlines. Only one participant discussed this tension:

> Some reporters told me that they intentionally game the system to try to do very clickbaity headlines so that they will win, to get them a boost in feed views on our site….So it's tough combating stuff like that. (Interview, September 7, 2018)

In addition, there was little consideration around the roles headlines play apart from attracting clicks. Headlines can shape perceptions of reality, framing the events of a story along a certain narrative and directing public discourse (Entman, 2007). However, there was no special consideration of the ethics of framing decisions in headline testing. Participants were accustomed to selectively broadcasting information about a story in contexts like Twitter, choosing a headline, image, and descriptive text to frame it from a certain perspective. Headline variants were treated with a similar logic. All variants that got tested were considered valid representations of a story, with no concern for how optimization might then privilege certain frames.

Another concern was how much test results actually reflected the impact of changes being tested (i.e., if a longer headline winning over a shorter one was due to its length). Many variables affect how a story performs in addition to its headline. The vendor participant discussed this concern from a different angle: She saw clients stop using their A/B testing integration over time because they had so many other more pressing priorities and sources of data vying for their attention. She highlighted analytics around audience engagement, membership, and video as other high priorities for newsrooms. There seemed to be a general sense from participants that headlines are important, but little quantitative proof of how relatively important optimizing them is for the business over time, compared to other data-oriented efforts.

4.1.3. Technical Constraints

Participants' default approach was to update headlines across every platform and context of publication once a test was completed and conclusive. This was framed as an assumption that certain characteristics of headlines resonate with audiences regardless of where they appear, and that finding those characteristics by means of testing unlocked a universally-effective approach.

There's another plausible explanation for why newsrooms select one headline framing, however. The technical tools necessary to test and change headlines expediently across many different platforms don't exist. Depending on the content management system (CMS), edi-

tors might only have the option to choose one headline across all contexts, or only add a search- or social-specific headline. With these limitations in place, it makes more sense to think in terms of what makes the best headline for a story generally, rather than needing to test across the different contexts a story would appear in. In addition, testing systems are limited in their ability to reveal differences across contexts. No participant conducted totally distinct testing across platforms, and only one did any native testing on a social media platform (Facebook). They either focused on testing for their most important distribution channel—in some cases search, in others social media—or on the broader qualities that made headlines effective in multiple contexts. They recognized the differences in audience preferences and demographics across different distribution channels, but there were limitations to how much those differences could be reflected in headline selection and testing because of CMS and/or platform constraints.

4.2. Social Dynamics

Headline testing is strongly influenced by the social dynamics of the stakeholders of the testing process at every level. First, the delineation of who controls the testing tool and how they interact with other parties determines how efficiently testing can occur. Second, fruitful interpretation and integration of test results depends on productive communication between the owner of the tool and their editorial collaborators. Finally, communication has a much better chance of being productive if credibility and feedback loops are established between parties. These interdependent factors determine how well a headline testing approach can integrate into a newsroom's workflow and impact how headlines are written.

4.2.1. Roles

There was no consistent title for the person who "owns" the A/B testing tool and process within an organization, the person who is in charge of training, interpreting and sharing test results, and overseeing the mechanics of running tests. People who control those aspects include audience development and engagement staff, editorial strategists, social media coordinators, and growth editors, a cluster that one participant summarized as "optimizer type people." For brevity, we refer to these individuals as "optimizers." These participants' time in journalism ranged from less than a year to a couple decades. Some started in traditional editorial roles, in print or digital, and some began their careers as optimizers. None expressed a desire to move into more writing- or reporting-focused journalist or editor roles. In all cases, newsroom participants owned the testing tool at their organization, or, in the absence of formal systems, were the person pushing for tool adoption and headline best practices.

Tool ownership is an important concept because of how roles are situated in the newsroom. In most cases,

optimizers considered themselves highly integrated with their editorial staff collaborators but saw an implicit or explicit barrier between themselves and editorial work. While a couple participants held roles with the word "editor" in the title, the word "journalist" never came up in self-descriptions of any roles. That division allowed groups to claim areas of expertise and become territorial about responsibilities. Tool ownership became a way to shift the power dynamic between editorial staff and optimizers, a change that one newsroom participant without a formal testing system in their current newsroom explicitly detailed as a benefit of A/B testing:

> It is a best practice in this sort of role to be deferential to editors and to writers, because they can be very precious, and you want to make sure that those relationships are really strong. But when they're just straight up wrong, it is really useful to be able to have that data to say like, we know that people click on—I'm using images because it's just really easy— We know that people click on pet puppies more than they do on babies. So this story about puppies and babies really should have a puppy photo, if we can't find one that's puppies and babies. And we can back that up with data, and the data is objective. And we both—even though we're sort of having this negotiation of whose position we're going to go with—we have this objective third party who's providing us information that neither of us is disputing. And so it's sort of changed the power dynamic a little bit—I hate to call it a power dynamic—but it's changed the power dynamic a little bit, because we can point to this third party data that we both agree is valid to say, 'I appreciate that you would like to present your story in this way. However, we know that that particular presentation is less likely to be successful than this particular presentation'. (Interview, August 14, 2018)

In this scenario, the deciding factor was a best practice brought up by the optimizer. However, while the best practice was a known, successful approach to presenting content, the optimizer further justified its use with third-party data to defuse a potential confrontation. The framing of reader data in the neutral language of an "objective third party" also allowed the optimizer to implicitly elevate audience preferences over editorial judgment without directly challenging the journalist's position.

Participants were quick to talk about the headline expertise that reporters and editors built over a career in journalism. However, optimizers also had knowledge of best practices for digital headline writing and a desire to enact those best practices in the newsroom. To do that, they needed a way to have conversations about headline writing with editorial workers on equal footing, not as outsiders trying to encroach on claimed territory. By owning the headline testing tool, optimizers elevated themselves to active participants in the publishing process. They offered something that journalists wanted—

more traffic to their stories—and in return got both explicit and implicit control over the headline writing process: Explicit control to select headline variants for testing, and implicit control to push editorial workers in the direction of best practices by demonstrating success with test results. As a result, no participants reported significant pushback from their editorial collaborators on the adoption or use of headline A/B testing.

4.2.2. Productive Communication

Participants identified productive communication with their editorial stakeholders as key to the testing process. The examples they gave of productive communication contained three common characteristics: proximity, consistency, and accessibility.

Proximity: Optimizers stressed the need to work closely with their editorial counterparts. One participant talked about how much of their work occurred at the individual relationship level, building up trust and credibility person by person, while another talked about how important the work of evangelizing the tool was during the process of adopting A/B testing at their organization. While optimizers used less personal communications channels (e.g., Slack messages and email newsletters), face-to-face communication was a key component of maintaining good relationships with editors. This took the form of formal relationships—such as recurring meetings with specified agendas, collaborations on big stories, and embedding with desks—as well as the casual conversation that came from working side-by-side in the newsroom. Proximity could also be achieved in digital communications channels. Three participants mentioned how helpful it was to have their teams present in the Slack channels that editorial workers used for workshopping headlines, as it gave them the chance to suggest changes and tests in the moment.

Consistency: Optimizers communicated results and best practices on a fixed schedule. Whether it was daily automated results, weekly newsletters, monthly reporting, or a recurring meeting, optimizers set expectations for what kinds of data editors should expect and the schedule they should expect it on. These regular communications, when curated by optimizers, typically highlighted specific examples of successful tests and illustrations of broader best practices that optimizers were monitoring. Automated communications provided a record of the results for each headline test. Rather than waiting for editors to come to them with questions about test results or best practices, optimizers proactively provided assistance. This increased the visibility of optimization work, kept headline writing front-of-mind, and encouraged further discussion.

Accessibility: For the data and insights provided by optimizers to be used effectively, it needed to be accessible and legible to those who were interested in its implications. This was accomplished by sharing results in public Slack channels and opening up data from tools

like Chartbeat to anyone with an account. Even in cases where data was restricted, limitations were more a case of only sharing data with people who would be interested, rather than one of gatekeeping sensitive information. Optimizers wanted as many people as possible in the newsroom to have access to their work. This accessibility also had the effect of increasing accountability. When knowledge was circulated widely, the impetus to improve headline writing shifted from those discovering best practices (optimizers) to those putting them into practice (editors).

4.2.3. Influence

A big part of maintaining productive relationships with editorial staff for optimizers, in which their suggestions were valued and implemented, was establishing credibility. As one participant acknowledged, journalists tend to be inherently skeptical people who, while generally "not highly numerate" themselves, interact with powerful figures who can fabricate statistics to advance an agenda. Journalists wanted to know that this optimizer could back up his recommendations with credible expertise.

Optimizers achieved that credibility by the training they went through and gave, and through the expertise they held and asserted. The training process itself didn't generally suggest much credibility: four participants either were informally trained one-on-one or taught themselves how to use the testing tool. However, journalists didn't have insight into that process, and the piece that they did have visibility of—that optimizers had spent more, or any, time learning the headline testing tool and process—helped establish their role as experts. Further bolstering this perception was the fact that optimizers tended to be the ones who taught everyone else how to set up, run, and interpret headline tests.

Once established, credibility asserted itself in communication. Participants explicitly characterized communication between optimizers and editorial staff in terms of feedback loops. Both directions of each of these dynamics were important in giving groups a sense of control in the headline testing process.

Editorial to optimizers: In the testing process, editors and reporters exercised control over certain aspects of headlines. In almost every case, headline variants for tests came from collaboration between reporters and editors, or editors were at least consulted. Editors also frequently initiated headline tests. In addition, while in two newsrooms winning headlines were automatically selected by the testing system, editorial workers often controlled the most important form of feedback: the ultimate decision of whether or not test results were incorporated into an article's headline. One participant elaborated on cases where this editorial intervention might manifest:

> Sometimes our opinions of heds will have changed by the time we are making that decision...we have fields

for both the article page and the social headline, so sometimes we want to have like a more explicit headline on social, and will keep a more, kind of magazine-y—what I might call vague—headline on the article page. It really goes back to the person who requested it to decide what they want to do with the information…we do not default to, 'and then we will change it everywhere to the winner of the test'. (Interview, August 10, 2018)

In contrast, in one of the newsrooms with an automatic system, readers were shown the winning headline by default after a test ended. While the system sent a notification with results to the person who set up the test, there was no human intervention. Since headline variants were often written by writers or editors in this newsroom, though, there was an understanding that editorial judgment had still been exercised at some point in the testing process. Automatically resolving tests was framed as a way to make headline testing more open to all writers and editors, but it also made enforcing rules around quality and best practices more difficult.

Optimizers to editorial: optimizers often provided editorial feedback in the form of test result data. This could be presented as either a single case communicating the results of one test, or as a longer trend. Though they had varying levels of involvement at every stage of testing, they acted primarily as interpreters of, and advocates for, test results.

The one area that participants consistently mentioned as the exclusive purview of editorial staff in A/B testing was the accuracy of headlines. In any negotiation around what alternatives to use in a headline test, or how to change a headline to optimize it better for the web, editors had veto power if they perceived a proposed headline as factually inaccurate or failing to convey the point of the story. Optimizers differed in their perception of this authority. Some were content to acknowledge editors' expertise and work within their requirements. That attitude came from a mix of respecting editorial experience and authority, and as a matter of expediency. One participant negotiated changes to headlines individually with editors for every story, so surrendering judgment over factual accuracy was a way to speed up conversations. However, another participant also felt that editors were overly cautious when thinking about story presentation:

I think historically, going back to the print side, newspapers were very profitable for a long time…It was kind of in the business' interest to be conservative with a small 'c' in how they presented the news. And to a certain extent, that got confused with ethics in journalism in my mind, that it was ethical to almost be dull. And to me, being interesting- the continuum between interesting and dull is unrelated to the continuum- or not highly related with the continuum between ethical and unethical. To me they're

two different things, but I think they got confused. And so there was no market imperative for people to be highly compelling in how they wrote headlines. (Interview, August 20, 2018)

Participants acknowledged that editorial workers had the authority to step in when they felt a headline wasn't factually accurate, but they differed in how willing they were to push back on that judgment with the backing of data and through careful management of editorial relationships for the sake of traffic. In addition, both editorial workers and optimizers had agency in shaping the broader contours of headline testing. Editors could request or initiate tests on their stories, and optimizers could flag low-performing stories for testing.

5. Discussion

Our study advances two main points brought forward in discussions around actor-network views of the newsroom. First, we extend the concept of a mediating actor in the newsroom between other actors and technological actants (Schmitz Weiss & Domingo, 2010). We've detailed two aspects of A/B headline testing: the content of headlines, and the social dynamics of the testing process. The intersection between these areas hinges on the optimizer. By running headline tests and bringing results to editorial workers, and by incorporating the suggestions and feedback of those editorial workers into testing, the optimizer allows editors to interact with the headline testing process without directly manipulating it. This is a similar role to that played by the production team in Schmitz Weiss and Domingo's (2010) case study of *El Periódico*, that of a "buffer" between journalists and technical tools. However, optimizers also raise the potential for "bridge" actors to attain greater agency. While the production team acted as an interpretive conduit to editorial complaints, optimizers are more transformative in their transmission of testing data and exert more direct influence on their editorial collaborators.

Second, by detailing the impact of A/B testing on the headline writing process, we reinforce the role technological actants play alongside human actors in shaping journalism as a sociotechnical phenomenon (Primo & Zago, 2015). While editorial judgment plays a role in shaping the inputs of an A/B testing system and often contributes to final selection on the output side of the system, the technological tool itself constrains and prioritizes output decisions. In some cases, publishers were willing to distribute optimized content with minimal direct human intervention aside from writing headline variants, but meaningful future work remains to be done to understand the conditions under which technical actants may overcome the types of negotiated editorial control that we predominantly observed. The role of the testing system speaks to Primo and Zago's (2015) conception of algorithms as mediating and transformative, a framing that points to a beneficial relationship be-

tween algorithms and human actors in co-creating news. However, those testing algorithms also extend beyond the purview of newsrooms and their ability to negotiate value tensions and exert editorial control, such as in Facebook's recent rollout of an organic testing tool (Moses, 2018). Specifically, relying on technology platforms for testing tools and data could further infrastructural capture, in which news outlets become editorially conflicted because of their reliance on the data and audience platforms provide, and algorithmic isomorphism, in which the dependence news publishers develop on a platform like Facebook for distribution allow the latter to shape the former as it sees fit (Caplan & boyd, 2018; Nechushtai, 2018). As content optimization incorporates additional external actors and actants, future work might examine how editorial control is then negotiated between internal and external actors and actants.

This study also offers evidence related to the benefits of scale sometimes enjoyed by larger newsrooms (Hindman, 2018). Namely, at an organizational level, companies with more resources can afford to hire more optimizers and pay for more testing infrastructure. More optimization presumably means more traffic, audience, and eventually revenue. At an audience level, sites with more traffic reached statistical significance of tests more quickly, whereas some smaller sites in this study stopped testing entirely because of their inability to get meaningful results. Scale becomes a competitive advantage in a data- and algorithm-driven publishing system; smaller publishers may find it difficult to keep up.

Finally, the findings we have presented on how journalists perceive A/B testing interacting with headline writing serves as the groundwork for further quantitative study of headline style and content over time. Our participants expressed little to no ethical concern about the role popularity (i.e., via click data) played in choosing headlines through A/B testing because they saw the effect of data as bounded by editorial judgment. There is room for further scrutiny of this assumption, however. In particular, we see potential in examining how the headline similarity of outlets with explicit focus on traffic generation and those with other stated editorial values has changed over time, as a measure of how traffic pressure has acted on the latter.

5.1. Limitations

There are several important limitations to acknowledge with the sample used in this study that suggest interesting areas for future work. First, because we didn't include writers or reporters in our sample, we're limited in our ability to make claims about inter-role dynamics from the editorial perspective. Moreover, without the benefit of direct observation (e.g., an ethnographic study), we can only take the interpretations participants presented at face value. For example, while participants noted positive reactions to headline testing from their editorial collaborators, that sentiment may come from an opti-

mistic perspective of advocating for the process. Second, our data represents a snapshot of events, attitudes, and perceptions as they occurred at a specific point in time, which precludes any ability to make longitudinal claims or comparisons. Measuring fine-grained changes in headline testing over time suggests yet another avenue for future study. Finally, because the newsrooms in our sample all utilized some form of A/B headline testing or optimization, we cannot make claims about how they compare to newsrooms that don't test headlines. Investigating those comparisons in future work would help provide a broader understanding of how A/B testing interacts with headline writing.

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Conflict of Interests

The authors declare no conflict of interests.

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Article

Does Fear of Isolation Disappear Online? Attention-Seeking Motivators in Online Political Engagement

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Abstract

This study investigated the effects of fear of isolation (FOI) on political content consumption and creation in the context of online communication. Using more than 1,000 respondents from South Korea, the study empirically tested a theoretical model of FOI on political content consumption and expressions with two mediators (i.e., attention/status-seeking, and anonymity-seeking). Results indicated that FOI is related to seeking attention and status in political outlets also connected to anonymity-preference that leads to political expression. Implications for political communication scholarship and for practitioners are that voters' political participations can be understood in a framework different from traditional focus on persuasion, political ideology, or demographics because—in today's virtual and interactive media environment—users are more content consumers or community participants.

Issue

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1. Introduction

On March 10, 2017, South Korea's Constitutional Court unanimously decided in favor of the impeachment of then-President Park Geun-hye. Her involvement in corruption and scandalous ties to her aides had sparked national uproar, fostering an unprecedented level of political participation in which, *inter alia*, the public gathered *en masse* on streets and in public squares for candlelight vigil protests, in unprecedented numbers (Lim, 2016). However, another notable phenomenon could be found in online news consumption and discourse. One conspicuous distinction was that on Korea's top news portal site, *Naver News*, relevant articles in the politics section were the most viewed story *and* received the most comments for every day of 2017. In fact, one story alone—on March 10—received in excess of 27,000 comments

(Naver, 2017). One of the highest-commented news articles ever was about former president Lee Myung-bak's controversial remarks regarding the island of Dokdo, which surpassed 349,000 comments (Kim, 2010). Considering that the website limits users to 20 comments per day, this level of participation is significant. As for other online platforms, eight of the top ten most listened-to podcasts are about politics (Podbbang, 2017).

South Korea has been considered a frontrunner in terms of online news consumption (Reuters, 2016), owing to the popularity of news portal services that aggregate numerous news outlets in a single website. Coupled with advances in mobile technologies, users conveniently can access news stories and instantaneously comment on them, vitalizing political discourse online (Houston, Hansen, & Nisbett, 2011, p. 79). This is particularly associated with news presentation/consumption

trends in South Korea. Since the early 2000s, South Korea's digital media landscape has been coupled with internet portal websites, the big three being *Naver*, *Daum* and *Nate*. Each of these began with personal media services (e.g., email and personal profile pages), developing their services into web search and news consumption. In fact, recent reports rank the so-called internet/news portals among the top five websites visited by Korean users (Chang Center Group, 2017; Nielsen KoreanClick, 2018). These portal platforms have become a prominent news aggregator, housing news articles from mainstream newspapers and broadcast stations to online-only sources as well as alternative media outlets. Each website features a news-commenting section unique to each portal, and these have become *the* arena and barometer for political opinions and engagement, as shown in *Naver*'s record-breaking user-commenting activity above.

In the Western world, political discourse occurs most often and actively on social media platforms (e.g., Facebook and Twitter) (Enli, 2017; Ott, 2017). However, Korea's unique characteristic of news consumption and engagement makes portal-based news commenting a key aspect of political engagement in the country, thus warranting a closer look.

This study explores online users' motives for political participation from the theoretical frameworks of fear of isolation (FOI) and attention-seeking, which may lead to political disinhibition (Suler, 2004)—that is, increased political participation online. We posit that individuals who display FOI due to their political opinions will use online platforms actively for their attention-seeking and anonymity-seeking preferences. Being able to gauge the political climate and express opinions anonymously will reinforce those individuals' willingness to be recognized and to be influential, tendencies that could augment political online participation and expression.

We believe this study explores a new framework of political psychology that goes beyond conventional paradigms (e.g., selective exposure based on partisanship or ideology) and contributes to a better understanding of anonymous and attention-seeking online behaviors in politics-based news consumption and conversation. We hope to propose a new definition of individuals' "preference of online" with emphasis on online efficacy and motivation/gratification factors sought after in the online sphere.

2. Literature Review: Fear of Isolation and Factors for Online Political News Consumption and Discourse

FOI is defined as a "psychological variable representing a negative emotional state associated with the prospect of voicing one's opinion about a given topic." (Neuwirth, Frederick, & Mayo, 2007, p. 452). FOI is associated with perceived public opinion—when others seemingly disagree with an individual's opinion on a topic matter, that individual feels discouraged from sharing his or her own

(Noelle-Neumann, 1974). Also, as discussed in Neuwirth et al. (2007), the theoretical framework of communication apprehension is applicable to FOI; perceived disagreement of the self's opinions with the group's may cause "fear or anxiety associated with either real or anticipated communication with a person or persons" (pp. 452–453). Pertinent literature on FOI associate it with the spiral of silence, indicating that FOI often leads to silence or conformity to the perceived dominant opinion. The same applies to the online environment—in Gearhard and Zhang (2015), agreeable political content was a predictor for the willingness to speak out, while exposure to disagreeing postings hindered opinion expression. Moreover, findings on motives for selective posting (Porten-Cheé & Eilders, 2015; Yun & Park, 2011) imply that online participation increases as people look for homogeneity of opinions.

Based on the above, FOI mostly has been linked to bandwagon effects or to explain successful agenda-setting by mainstream media (Liu & Fahmy, 2011). However, we focus on a different potential outcome related to FOI: increased online activities. This might seem counter to the concept of fear, which implies discouragement. However, we posit that FOI may well lead to increased political activities, especially given the characteristics of the online environment.

Reasons for our argument are threefold: first, FOI has to do with the need for selective exposure to avoid situation where one's ideas are likely to be rejected by others. We have seen increasingly-partisan positions of media, and people easily filter content based on perceived ideological congruence (Bennett & Iyengar, 2008; Coe et al., 2008; Iyengar & Hahn, 2009). And we note that the online sphere encourages 'partisan media' which enhance selective exposure via increasing capability of self-gatekeeping. Much of the literature has focused on polarization and selective exposure online, as online enables users to choose stories from different sources based on political heterogeneity (Messing & Westwood, 2014). So this trend enhances partisan affiliation that helps relieve fear of isolation, given its capacity to avoid or bypass real-life encounters in political discrepancies. Ideas FOI seeks willingness to voice bypass real-life penalties and sanctions incurred from being objective against dominant opinions. This is somewhat contradictory of classic FOI theory which indicates connection between FOI and spiral-of-silence to avoid sanctions and penalties.

Also, developments in speed and interactivity have allowed for a facilitated access to information and ideas (Jensen, 2017) which makes it easier for an individual to determine, from her or his perspective, what the dominant public opinion seems to be (Springer, Engelmann, & Pfaffinger, 2015). This conjecture is based on the fact that an individual thus choose from multiple platforms while focusing on sites offering opinions consistent with her/his view, and can ignore sites offering alternative views.

Second, as a result of this increased degree of FOI, individuals might be inclined to constantly consume on-

line political content (news, user posts, comments, etc.) to gauge the public opinion climate. This might be accelerated among those with FOI, since these individuals worry that their opinions might conflict with dominant ones (Hayes, Matthes, & Eveland, 2011; Kim, Kim, & Oh, 2014; Weiman et al., 2012).

Finally, the online environment allows for individuals with FOI to do something about their fear. While in past studies FOI has been associated most closely with spiral of silence, we posit that it might actually lead to increased participation in online political discourse. In the online setting this is possible because of anonymity, inclusivity and virtual identities (Nagy & Koles, 2014). Masked by an online identity, an individual need not experience isolation in real life—rather, the individual might utilize interactive features online to easily post ideas conforming to the (perceived) dominant opinion. For those with FOI, we argue that this increased activity may be a way to react to their fears and ultimately resolve them by being a part of the conversation (and not being isolated). By the same token, consequences of online communication are lighter, meaning there is a smaller chance of the individual facing actual isolation as may opposed to when engaging in face-to-face communication. This is further discussed below in light of a possible anonymity-seeking tendency among individuals with FOI.

3. Attention-Seeking and Online Political News Consumption and Discourse

Many studies have found that narcissism and subsequent attention and status-seeking are strongly connected to online behaviors (e.g., DeWall, Buffardi, Bonser & Campbell, 2011; Huberman, Romero, & Wu, 2009). It is predicted that narcissists communicate in ways that draw attention to themselves via profane and self-promotional content (DeWall et al., 2011). In the same vein, one study on YouTube video uploading and downloading behaviors has found that productivity in crowdsourcing is strongly affected by attention-seeking (Huberman et al., 2009). So it is indicated that attention is an important driver of contributions to the digital commons. Interestingly, participants' attention-seeking preference is affected by online content consumption behaviors exhibiting the aggregate bandwagon effect. This means that attention-seekers tend to appeal to the majority opinion in the online community which is mostly partisan media accommodating political interest for the party not the mass, so the bandwagon effect might emerge at community level in the context of digital communication. This is in contrast to the mass communication era. Especially, popularity cues on the viewership of online user-generated content stimulate both consumption and participation behaviors.

To note, "web users…overwhelmed by information and quality uncertainty, will gravitate toward the popular choices made by earlier decision makers, which appear via indicators such as hit counts to forge quality impressions" (Hu & Sim, 2011, p. 2382). Moe and Schweidel

(2012) also found that positive ratings environments increase posting incidence, whereas negative ratings environments discourage posting. This finding indicates that political news consumption and conversation might be the consequence of inherent needs of attention, reputation and status and so on. Accordingly, it is conjectured that the traditional notion of the bandwagon effect should be understood in a novel light in the context of online communication. Bandwagon effect traditionally is based on an individual's need to avoid social isolation arising from discrepant opinions. And, with increasing interactivity in online communication, the attention-seeking preferences of users wanting to belong to major public opinion by making themselves part of a politically-homogeneous community, may drive the bandwagon effect. Applying this notion to the context of political news consumption and participation, we presume that attention-seeking behaviors will lead to politics-based news consumption and conversation.

4. Anonymity-Seeking in Political Expression

We posit that anonymity in the online environment will be an important factor for increased political activities among individuals with FOI. That is, as online media expand in their utility as tools for public opinion formation, isolation in real-life settings can be overcome with anonymity and interactivity in the online environment (McElroy, 2013; Nielsen, 2014). Communication factors such as anonymity, invisibility, and lack of face-to-face contact provide the opportunity of lowering behavioral inhibitions in online media environment (Joinson, 2003, 2007; Kiesler, Siegel, & McGuire, 1984; Lapidot-Lefler & Barak, 2012; Suler, 2004).

Anonymous conversations are unique to online communication (Berg, 2016). Anonymity enables an alter ego whereby one can build a hidden and virtual identity to possibly protect one's real identity from the potential threat of negative outcomes (e.g., criticism, disapproval, isolation) imposed on minority opinions. We note that anonymity helps users to relieve psychological discomfort and self-monitoring efforts when posting comments or expressing their opinions in the face of fear of potential negative outcomes (Bailenson, Yee, Merget, & Schroeder, 2006). Indeed, anonymity was a factor that encouraged individuals to give opinions about controversial issues (Berg, 2016; Cho & Kwon, 2015). Lack of face-to-face confrontations helps avoid heated discussions, therefore fostering an environment where participation from all individuals is welcome (Papacharissi, 2004). In fact, online anonymity has been found to decrease one's inhibition and to increase self-disclosure (Bailenson et al., 2006; Bargh, McKenna, & Fitzsimons, 2002; Chiou, 2006, 2007; Joinson, 2001).

From the above, we further speculate that individuals with FOI will in fact display anonymity-seeking tendencies. In general, online users favor anonymous features in political conversations and engagement, be-

cause anonymity in online news sites allows for an individual to voice opinions more freely; online aliases are not directly linked to an individual's own personal and/or professional networks (Nielson, 2014). Again, this is contrary to traditional schools of thought on FOI, which emphasize a spiral of silence-type behavior. However, given that online anonymous platforms enable people to do what they usually would not in the real world (Suler, 2004), we can posit that anonymity can free people from potential fear occasioned by active political engagement and expression.

As noted above, we conjecture that FOI would be associated with the need to be a part of a partisan community who share common political ideologies. Therefore, one could easily draw attention or status from peer members in the group through excessive and enthusiastic politics-based knowledge attainment and conversation. To be specific, online participation would be driven by status and status-seeking, and that status sentiments are more likely to sustain online communities (Lampel & Bhalla, 2007). We would like to focus on self-serving interest as a major driver to participate in political conversations via online.

In sum, attention/status-seeking (DeWall et al., 2011; Lampel & Bhalla, 2007) and anonymity-seeking can encourage people to do certain things that they would not usually do in the real world (Suler, 2004). Therefore, we hypothesize that such attitudinal and behavioral tendencies of FOI combined with characteristics of online media will amplify an individual's political consumption and participation online.

H1) FOI will be associated to a) attention/status-seeking and b) anonymity-seeking preferences online.

H2) a) Attention-seeking and b) anonymity-seeking preferences online will lead to politics-based news consumption and conversation.

H3) FOI will be indirectly related to politics-based news consumption and conversation via a) attention/status-seeking and b) anonymity-seeking preference online.

5. Method

5.1. Procedure

A web-based survey was conducted to answer proposed research questions and test hypotheses. The survey was administered by the Korean panel of Macromill Embrain Co., a leading research firm. The survey was conducted from January to February 2017. A total of 1,107 respondents participated in the survey. The probability quota sampling was designed based on Korean population statistics (Ministry of the Interior, 2017). Participants from the general population were given credit according to the individual reward policy of the company. The number comprised of 47.8% female, 52.2% male. Average age of participants was 40.75. We also excluded "less than 20" and "more than 60" age brackets

as our study focused on the population of online users in the political context. However, it should be noted that both age groups are active online in the Korean political context, therefore, the sample might not represent Korean online-sphere demographics. Age group numbers are as follows: 228 in the 20–29 bracket (20.6%), 280 in the 30–39 bracket, (23.4%), 275 in the 40–49 bracket (24.7%), 315 in the 50–59 bracket (28.5%). Participants' age- and gender-distribution was close to the regional population representation designed by our quota sampling. Compared to the statistics (excluding the "more than 60" and "less than 20" age bracket), our sample is fewer in 20–29 (−0.4%), 30–39 (−0.6%), 40–49 (−3.3%) and more 50–59 (+1.5%). Given that Internet use is saturated among younger generations but not among older (Statista, 2016), this distribution is acceptable.

5.2. Measures

Most of the survey items were adapted from pre-validated research work, so as to increase the construct validity, except for the measure for anonymity-seeking and politics-based news consumption and conversation (PNCC), which were created for this study. For all measures, 5 point Likert scales were used (1 = strongly agree, 3 = neither agree nor disagree, 5 = strongly disagree) except for PNCC which was measured with amount of time. All items for each variable are displayed in Appendix 1.

5.2.1. Political News Consumption and Conversation Online (PNCC)

A composite index of PNCC was created by adding a total of six items measuring the frequency of respondents' use of social media for political content. Six major social media platforms and portal site news platforms were selected based on their impact on the political landscape in South Korea. Respondents were asked to report their use in ten-minute intervals (from 0 to 60+, 1 = 0 min, 8 = more than 60 min), i.e., how long they used social media for political news checking and participation in conversations (Range = 6 to 48, M = 16.34, SD = 7.76).

5.2.2. Fear of Isolation (FOI)

To measure FOI, we borrowed three items from Kim (2012). The items include "I worry about being negatively evaluated when others disagree with me", "I tend to let the other person win an argument even when I know I am right", and "If my political opinion were to become widely known around my workplace, I am very concerned that people would avoid me or act differently towards me" (α = .64, M = 2.82, SD = 0.47).

5.2.3. Attention/Status-Seeking

We borrowed six measurement items to gauge perceived attention/status-seeking from Berger (2014). The items

include "I want to be perceived positively", "I would like to look special", "I would like to be considered an expert", "I would like to be considered more knowledgeable", "I would like to be seen as an opinion leader" and "I would like to receive attention from others" (α = .89, M = 3.05, SD = 0.72).

5.2.4. Anonymity-Seeking

We developed four measurement items to gauge perceived anonymity-preference. The items include "During anonymous online conversation via social media or online news sites, I feel less constrained to talk about certain things than in conversations where I can be identified", "Anonymous online platforms enable me to support my favorite politicians on political-news websites", "With anonymity online, I can argue with someone of different opinions without reservations, in comparison to in the offline setting", and "Anonymous online platforms enable me to engage in political discussions" (α = .87, M = 3.30, SD = 0.67).

6. Results

The study tested a structural model of attention/status-seeking and anonymity-seeking preferences as mediators between FOI and PNCC. Data were analyzed with the AMOS 23 software program, with a covariance-based approach, using maximum-likelihood estimation. The structural equation model was developed after including all hypothesized paths among variables: χ^2(54, n = 1000) = 203.94.64, p < .001, χ^2/df = 3.183, SRMR = .0361, TLI (NNFI) = .969, RMSEA = .046, and CFI = .978.

6.1. Hypotheses Testing

The suggested model (see Figure 1) indicated all hypothetical paths to be statistically significant. The effect of FOI on attention/status-seeking (H1a) was significant (B = .334, S.E. = .048, β = .431, p < .001). The effect of FOI on anonymity-seeking (H1b) was significant (B = .730, S.E. = .070, β = .483, p < .001). So H1 was confirmed statistically significant. The effect of attention/status-seeking on politics-based news consumption and conversation (H2a) was significant (B = 2.294, S.E. = .490, β = .162, p < .001). Also, the effect of anonymity-seeking on politics-based news consumption and conversation (H2b) was significant (B = 1.847, S.E. = .323, β = .186, p < .001).

6.2. Mediation Analysis

H3 posited the mediating effect of key traits of social media such as attention/status-seeking. The indirect effects of FOI on PNCC via attention/status-seeking (H3a) and anonymity-seeking (H3b) were examined using an
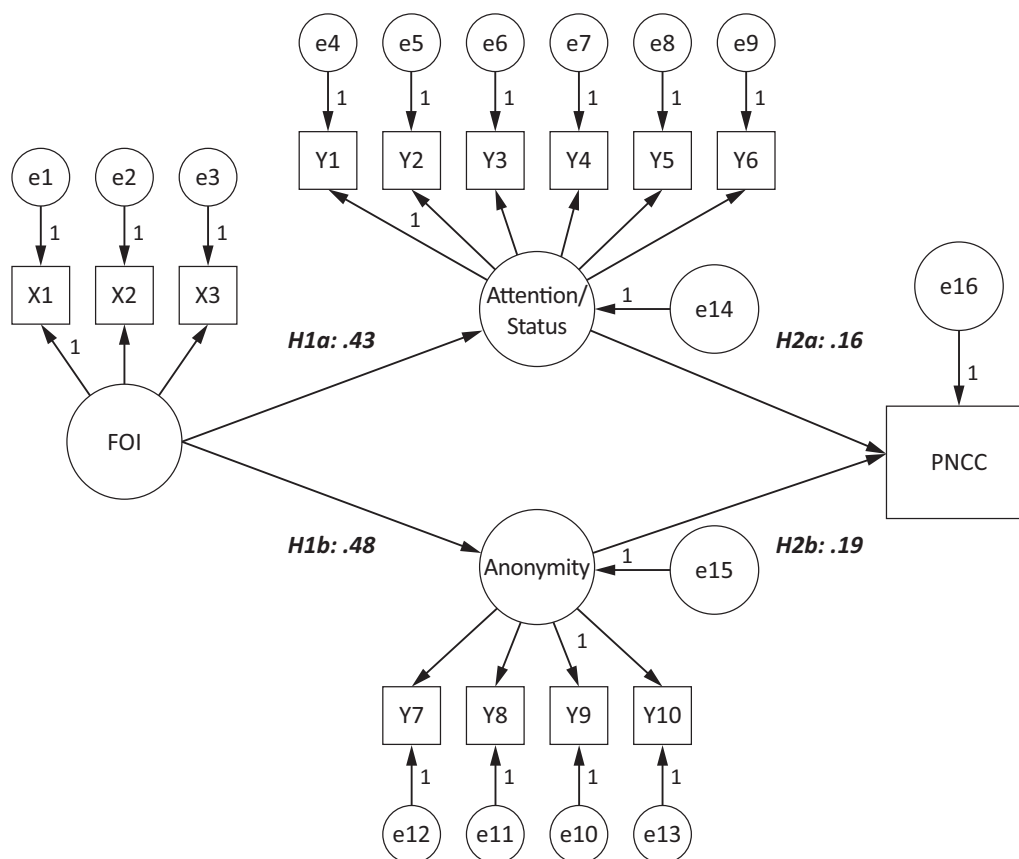

Figure 1. Results of testing hypotheses with standardized path coefficient.

approach proposed by Baron and Kenny (1986), and the significance of the indirect effects was examined using bootstrapping techniques. As suggested by Preacher and Hayes (2008), 5,000 bootstrap samples were computed and a bias-corrected 95% confidence interval (CI) calculated. H3a examined whether attention/status-seeking would connect FOI with PNCC. The indirect effect of FOI on PNCC via attention/status-seeking was significant (β [Bootstrap 95% CI] = .044 [.018, .067], p < .005). And H3b examined whether anonymity-seeking would mediate between FOI and PNCC. The indirect effect of FOI on PNCC via anonymity-seeking was significant (β [Bootstrap 95% CI] = .049 [.021, .073], p < .005). Hence, H3a and H3b all were supported.

7. Discussion

This article takes a different approach to FOI and suggests a new model for understanding its role for online political discourse. This model suggests that FOI is a possible factor for online activities such as news consumption and commenting. Traditionally, FOI has been studied in association with passive effects (e.g., bandwagon effect, agenda-setting). However, this study implies that FOI actually be a major predictor for active news engagement (news consumption, commenting) online.

Firstly, we found that FOI was associated with attention/status- and anonymity-seeking preferences online, and that these preferences led to politics-based news consumption and conversation. This means that the individual's fear resulted in an increased motivation to become part of the mainstream (dominant opinion), rather than be shut them down. Note that this correlation should be understood particularly in the context of online communication, as online features such as interactivity, anonymity and accessibility help create a virtual and loosely-knit yet politicaly- homogeneous community. This finding can drive future theorizing on FOI, anonymity, status-seeking and opinion congruency in relation to the "bandwagon" effect on the level of online community, which contradicts the previous notion of FOI and spiral-of-silence.

In fact, we found that stronger the FOI, the higher an individual's desire for attention and heightened status. And this finding is congruent with previous indication from Hayes et al. (2011) that "fear of social isolation (FSI) prompts people to seek out information about the climate of public opinion" (p. 439). That means, fear tends to enhance the need for sense of belonging to dominant opinions in the online context, thereby motivating people to act and participate to make dominant their own opinions. This leads fearful individuals to have a stronger urge to consume information (to comprehend what the dominant opinions are) and to become part of the discourse (through conversations in commenting threads) (Velasquez, 2012). So it is conjectured that they find like-minded people online who share their viewpoints and that this makes them feel less isolated.

Noteworthy here is that these tendencies are shown in the online environment, due to these individuals' anonymity-seeking behavior. Per H3, we found that FOI was related indirectly to politics-based news consumption and conversation via attention/status-seeking and anonymity-seeking preferences online. We must note that these individuals still have high levels of FOI, and the fear is most detrimental in possible face-to-face isolation and negative responses from others. Therefore, FOI individuals turn to online platforms where they can participate in conversation through virtual identities (Joinson, 2001; Lapidot-Lefler & Barak, 2012;). This reduces anxiety about what might come from the consequences of their actions. Coupled with the attention/status-seeking characteristics, FOI individuals indeed become highly motivated to engage in political news consumption/conversation online. Other studies also found that willingness to gauge the public opinion climate was associated with the willingness to speak out (Nielsen, 2014; Yun & Park, 2011), but the influence of anonymity *per se* in the online setting was not confirmed. In this light, this study contributes to scholarship through its exploration of the linkage among FOI, anonymity and the willingness to engage in political discourse.

Another contribution of this study to scholarship about online political behaviours is that it provides a theoretical framework of digital consumerism to understand political news consumptions and participations. While studies on marketing and virtual communities (e.g., DeWall et al., 2011) have focused on "attention/status-seeking" in relation to the motivation of content creators and community leaders' political communication, scholarship has paid little attention to this area. Considering that traditional political scholarship has examined participants mostly with close attention to political ideology or orientation, partisanship and other demographic variables such as race, gender, ethnicity and age, *this* study proposes a new paradigm via looking at online news sites as political communities where interactive content consumers create and consume the content in a self-fulfilling and sufficient way. Also, it is indicated that by and large political- content consumers online might be different in nature as they are not so much political-enthusiasm driven by political persuasions or grave social concerns and causes, as by those individuals' narcissistic psychological states, and that seeking a high level of public recognition might be a strong driver to political engagement online through various social platforms.

Therefore, this framework also can provide practical implications for news organizations that news consumption also combines with expressive participation to boost their knowledge and/or to gain recognition from peers in news-sites or social platforms. For instance, news organizations may benefit from rethinking how user comments are displayed and engaged with. That is, the "top" comment model (where the number of "up-voting" determines which comments receive "top" status, therefore is displayed at the top) may discourage active political

participation among all users. A recent study (Oh, 2014) found that such an online discourse model potentially results in a misrepresentation of public opinion—"top" comments being displayed above others causes them to receive more "likes" and engagement, thus dictate the online discourse, especially in political issues. This is particularly pertinent for FOI characteristics studied in this article, as individuals with such traits may refrain from sharing their opinions when gauging the dominant opinion climate against their own. Thus, news organizations could consider restructuring commenting sections to create a more-welcoming environment for all voices. Such efforts can be seen in commenting sections of news websites such as *NYT* (providing options to view/sort comments in different ways, such as Editor's Picks), and *Naver News* (eliminating the "top" comment model for stories categorized under politics) (Park, 2018).

We also point out the importance of this study from an intercultural perspective. This study was conducted in South Korea, a culture and population that holds implications regarding key factors in our model. The study by Shim and Oh (2018) indicates that anonymity-seeking behavior is even stronger in South Korea due to its cultural characteristics. Such characteristics include individualism vs. collectivism from Hofstede's (1983) cultural dimensions and heightened influences of self-construal. According to the cultural dimensions perspective, Koreans (as part of the East Asian culture) display higher levels of collectivism as opposed to the individualism of the west. That is, Koreans value harmony and blending in as a whole, and refrain from actions of conversation that might be deemed different. By the same token, Koreans tend not to voice their opinions conspicuously, especially when they are recognizable, lest they cause discord among communities and collectives of which they are part (Choi & Park, 2014).

Self-construal refers to the degree of an individual's concerns regarding how the self is construed by others. Markus and Kitayama (1991) notes that Eastern and Western individuals have "strikingly different construals of the self" (p. 224) in that individuals in Asian cultures define the self closely based on how others might view them, with emphasis on fitting in. In similar light, Yoo's (2012) study found that Koreans paid close attention to how others would view them, and even hesitated to publicly post their thoughts on social media due to concerns over how they will be judged by others. We believe that such characteristics increase anonymity-seeking inclinations among Koreans more so than in Western culture, where individuals participate in political conversations and voice opinions more freely. Thus, future studies could benefit from further exploring and online political discourse behavior in light of cultural differences between East and West.

8. Limitations and Suggestions for Future Studies

While this exploratory study aimed at a new approach to contribute to the scholarship on FOI and political discourse, we acknowledge that the article is not without limitations.

One limitation relates to measures of fear of isolation. FOI may manifest itself in different forms for individuals with different backgrounds. To be specific, FOI has differentiating subtle nuances in its concept such as trait-, issue-, and state-based fear. We measured only communication apprehension based on personal trait in this study, whereas future effort can explore different types of fear arising via a specific issue or personal situations. In that way we can examine how political expression via online outlets are connected to the various types of FOI whether source of fear derives from personal history of negative interactions or from a perception of dominant opinion about a specific issue, or from factors sensitive and unique to the political itself. Therefore, we believe that a refined definition and exploration of FOI itself based on online and political contexts is necessary.

We are concerned about methodology as our data lumped news consumption and contribution with the online conversation. While a big difference exists between reading news and contributing to online discussion, we are attentive to the fact that online news service is designed to simultaneously trigger consumption and participation via comment thread service, and it would be more convenient to recall the amount of time online as this survey relies on self-report based on personal memory. To address this limitation, future study might attempt to look at how frequency of online news consumption and participation can be related distinctively to FOI and online anonymity. Also we exclude above 60 age bracket in the survey who are active online users in Korean context, therefore, future study can collect representative sample for further exploration.

Also, in this study we looked at only six major social platforms for political engagement yet, nowadays, various platforms such as podcast and political communities have arisen as political agenda-setting and forming conversations, so future research could delve into more diverse and cutting-edge political communities to understand political expressions via online. Another limitation could stem from the fact that data was collected only in South Korea. While South Korea is known to be highly advanced in terms of Information Communication Technologies (ICTs), and boasts one of the highest numbers of Internet users, its media environment differs from those in other societies due to political and cultural discrepancies. Therefore, different online media environments may exert varying levels of influence on someone with FOI. Even with the same level of FOI, societal characteristics, online culture, and available resources may promote or inhibit behaviour similar to that of Korean participants.

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Conflict of Interests

The author sdeclare no conflict of interests.

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Appendix 1

Fear of isolation (Kim, 2012)

- I worry about being negatively evaluated when others disagree with me.
- I tend to let the other person win an argument even when I know I am right.
- If my political opinion were to become widely known around your workplace, I am very concerned about that people would avoid me or act differently toward me somehow.

Attention/status-seeking (Berger, 2014)

- I want to be perceived positively
- I would like to look special
- I would like to be considered an expert
- I would like to be considered more knowledgeable
- I would like to be seen as an opinion leader
- I would like to receive attention from others

Anonymity-seeking (Self-developed items)

- During anonymous online conversation via social media or online news site, I feel less constrained to talk about certain things than I would in identifiable conversation.
- The anonymous online platform enables me to support my favorite politicians on political news websites
- Thanks to anonymity online, I can argue without reserve with someone having a different opinion, than in the offline context
- The anonymous online platform enables me to engage in political discussion.

Social Media Use (Self-developed items)

- The next set of questions asks about your use of media for searching for news on politics and political conversations. Please provide your answer in ten-minute intervals (from 0 to 60+). Usually, on a typical day, how many minutes a day do you spend on these media platforms for political news consumption and conversation?
  1) Facebook
  2) Twitter
  3) Naver news
  4) Daum news
  5) YouTube
  6) Other online platforms

Article

Social Television Viewing with Second Screen Platforms: Antecedents and Consequences

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Abstract
This study investigates the causal relationship between antecedents and consequences of social television viewing combining the television screen and concurrent use of a mobile, "second screen" media platform. The results indicate that social television viewing is a complex process driven by the viewers' program affinity, motives, interpersonal interaction, and the perceived media characteristics of alternative platforms. The social television viewing behavior also has a positive influence on loyalty to television programs, time-shifted viewing, and product purchase intention. The implications of these findings and recommendations for future research are discussed.

Issue
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1. Introduction

As mobile devices proliferate through adoption of smartphones, tablets, and laptop computers, today's audiences are increasingly involved with television content through a "second screen" platform. In particular, mobile enhancement apps allow audiences to remotely comment and share their favorite shows. Social media create a new and powerful "backchannel", fueling the renaissance of live broadcasts. Mobile and tablet devices empower viewers to experience television whenever and wherever they want (Proulx & Shepatin, 2012). All these developments have significantly invigorated the social nature of television viewing—social television viewing—the use of online apps and mobile devices to promote communication and social interaction related to television content. The emerging pattern of social television viewing is meaningful for program producers, broadcasters, and advertisers in their justification of investment in content, retaining and acquiring viewers, enhancing brand affinity and program loyalty, as well as identifying and marketing to the most valuable audi-

ences. In light of the significance of social television viewing, this study aims to identify major exploratory factors of social television viewing from the perspectives of media content, media platforms, and audience attributes. This study further investigates the impacts of this process on program loyalty, time-shifted viewing, and product purchase likelihood.

2. Literature Review

2.1. Social Television Viewing and Second Screening

The emerging pattern of social television viewing through portable devices and social media platforms represents the ongoing convergence between mass and interpersonal communication (Perloff, 2015). Social television viewers use "communication technologies to connect with their friends and family, even when they are not watching the same screen" (Bellman, Robinson, Wooley, & Varan, 2017, p. 73). Recent studies on social television are focused on the motives and personality characteristics of social television users (Cohen &

Lancaster, 2014; Guo, 2018; Guo & Chan-Olmsted, 2015; Han & Lee, 2014), television-related contents that are posted on various social platforms (Wohn & Na, 2011), and the media effects of social television interactions on talent show content and program protagonists (Winter, Krämer, Benninghoff, & Gallus, 2018).

Second screening, a similar concept with social television, describes that second screeners use digital devices (e.g., smart phones, tablets, or laptop computers) while watching television to access the Internet and social media platforms in order to obtain more information about or discuss the program they are watching (Zúñiga, Garcia-Perdomo, & McGregor, 2015). In the context of news consumption, second screening has been widely used by audiences during breaking news, live coverage, political debates, and online political participation (Giglietto & Selva, 2014; Zúñiga et al., 2015).

Drawing upon previous studies on social television and second screening, this study defines *social television viewing* as the degree of intensity or types of connections that audiences develop with television content through online or mobile apps via second screen platforms. *Second screen* platforms here refer to mobile devices (e.g., smartphones, tablets, and laptop computers) that allow television viewers to interact with television content through the Internet and enhancement apps. Note that the term "television content" is defined broadly in this study, including the program content itself, characters or celebrities in the show, and related staff such as writers, directors, or producers, etc.

2.2. Program Affinity, Involvement, and Genre Preference

Affinity, defined as the level of importance one attaches to a medium or media content, has received considerable research attention in broadcasting and electronic media (Rubin, 2009). Rubin and Perse (1987a) measured television program affinity as the perceived importance of watching favorite television programs in audiences' daily lives. Affinity was found to be associated with diverse media use behavior and viewing motives (Haridakis & Hanson, 2009). When examining one of the most popular social media platforms, YouTube, Haridakis and Hanson (2009) included affinity as one of a range of independent variables predicting such viewing behavior as co-viewing videos on YouTube and sharing videos with others.

Rubin and Perse (1987a, 1987b) categorized viewer involvement with soap operas or television news as affective involvement, cognitive involvement, and behavioral involvement. An involved television viewer may feel affect toward those in need on the show (i.e., affective involvement), consider the messages of the show (i.e., cognitive involvement), and talk about the show with others (i.e., behavioral involvement) during and after the exposure. In the case of reality programming, Hall (2009) proposed audience involvement as a three-dimensional construct to capture the current reality program consumption in a cross-media environment. Hall's dimensions include social involvement, cognitive involvement, and online involvement.

Genre preference refers to television viewers' predisposed liking of one specific program type or genre among a set of available program types or genres (e.g., soap opera, sports, drama, news, etc.) (Youn, 1994). Scholars and industry practitioners have previously concluded that television genre is an important predictor in viewing choice because the industry relies heavily on imitation (Bielby & Bielby, 1994). Conventional program types, such as drama, sitcom, and so on, bear systematic relationships to program preferences (Geerts, Cesar, & Bulterman, 2008). The preferences of different types of content could stimulate diverse social viewing experiences and communication patterns surrounding programs. For example, genre preferences can impact the way viewers talk, chat, or interact with each other while watching television or afterwards (Geerts et al., 2008). Sports programming is often cited as a genre best suited for stimulating social interaction. Other types of content such as cooking programs and movies also present this type of sociability (Harrison & Amento, 2007). Some genres have been shown to be motivators of viewer engagement experiences such as sharing these program videos or viewing experiences with others. Thus, the following research questions are proposed:

RQ1: How is program affinity related to social television viewing via second-screen platforms?
RQ2: How is program involvement related to social television viewing via second-screen platforms?
RQ3: How is program genre preference related to social television viewing via second-screen platforms?

2.3. Compatibility, Perceived Ease of Use, and Convenience

Given the innovative attributes of mobile devices like smartphones, innovation diffusion theory offers a useful heuristic framework to investigate how individual audiences use mobile second screen platforms to engage with television content. Rogers (2003) conceptualized the perceived characteristics of an innovation as relative advantage, compatibility, complexity, trialability, and observability. Compatibility is defined as "the degree to which the adoption of a technology is compatible with existing values, past experiences, and needs of potential adopters" (p. 15). Thus, compatibility may refer to compatibility with the values or norms of the potential adopters or it may imply congruence with existing practices of the adopters (Tornatzky & Klein, 1982). In Tornatzky and Klein's (1982) meta-analysis of innovation adoption, the authors discovered that an innovation is more likely to be adopted when it is compatible with an individual's job responsibility and value system. Additionally, prior innovation diffusion research found that com-

patibility is salient in predicting the adoption of a range of new communication technologies (Chen, Gillenson, & Sherrell, 2002).

The present study adopts perceived ease of use from the theory of technology acceptance as the second variable to predict the intent to use second screen platforms to engage with television content. Perceived ease of use is defined as "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p. 320). Prior studies showed that perceived ease of use has significant effects on user's enjoyment of cell phone usage (Kwon & Chidambaram, 2000), online learning systems adoption (Saade & Bahli, 2005), and mobile Internet applications acceptance (Cheong & Park, 2005). The above research suggests that audiences' perceived ease of use of relatively new online communication systems like social media and enhancement apps would be related to their adoption for interaction with media content.

To better understand social television viewing through mobile second screen devices, this study includes perceived convenience of these mobile platforms as the third predictive variable. From marketing perspectives, convenience is defined by the time and effort consumers use in purchasing a product, or as a characteristic or attribute of a product (Berry, Seiders, & Grewal, 2002). Time-related consumer research includes studies of time allocation, temporal orientation and perception, and cultural influence (Gross & Sheth, 1989). Consumers' energy expenditures are examined from the perspectives of physical and emotional effort (Bettman, Johnson, & Payne, 1990). Consumer behavior research revealed a significant correlation between individual differences and perceptions of required effort. Papacharissi and Rubin (2000) found that convenience of Internet use is significantly predictive of the duration or length of overall Internet usage. Moreover, Ko, Cho and Roberts (2005) suggested that consumers who have high information, convenience, and or/social interaction motivations for using the Internet tend to stay at a website longer to satisfy their needs. Thus, the following research questions are proposed:

RQ4: How is the perceived compatibility of second-screen platforms related to social television viewing?
RQ5: How is the perceived ease of use of second-screen platforms related to social television viewing?
RQ6: How is the perceived convenience of second-screen platforms related to social television viewing?

2.4. User Motives, Audience Innovativeness, and Personal Social Characteristics

Traditional television viewing motives found in prior studies include habit, relaxation, companionship, passing time, information/learning, arousal, social interaction, escape, and entertainment as major drivers (Ru-

bin & Perse, 1987a, 1987b). For watching television content on the Internet (e.g., streaming video or webcasts), Lin (2001) found that entertainment appears to be less potent than the other two motives, information learning and escape/interaction, when examining online services adoption. However, with further exploration of webcasting adoption at a later time, the author concluded that entertainment plays a more critical role than news and information (Lin, 2004, 2006). Furthermore, audience motives are found to predict various viewing activities (Rubin & Perse, 1987a, 1987b). The more strongly viewers are motivated, the more actively they engage in various audience activities before viewing (e.g., viewing intention), during viewing (e.g., attention and involvement), and post-viewing (e.g., discussion) (Lin, 1993). In addition, more salient viewing motivations, especially exciting entertainment and social utility, are found to be related to parasocial interaction, post-viewing cognition, and post-viewing discussion in the soap opera consumption context (Rubin & Perse, 1987b).

Prior studies have indicated that alternative video platforms and traditional television viewing share a majority of motives such as entertainment, information, diversion, personal communications, and passing time (Guo & Chan-Olmsted, 2015; Lin, 2004, 2006). However, due to other innate media characteristics associated with the Internet and its online apps, there are additional motives involved with these mobile devices, such as convenience, immediate access, and social interaction. The current study therefore synthesizes various motives for traditional television viewing, Internet use, and new media technologies to assess the social and physiological origins of social television viewing experiences, and poses the following research question:

RQ7: What user motives are related to social television viewing via second-screen platforms?

Audience members' personality traits regarding an innovation like new media technologies could also help predict how they might use second screens to engage with television content. In the domain of information technology, Agarwal and Prasad (1998) defined personal innovativeness as "the willingness of an individual to try out any new information technology" (p. 206). The individual's innovativeness trait is purported to "contribute to his or her cognitive response towards making an innovation adoption decision" (Lin, 2004, p. 447). Midgley and Dowling (1978) found that both innate innovativeness (the social-cognitive foundation) and actualized innovativeness (the social-situational basis) of an individual's personality traits are associated with the adoption of an innovation. The degree of innovativeness, novelty-seeking, and creative ability displayed in an individual's personality traits could single out those who have a greater propensity for early adoption of an innovation (Hirschman, 1980). Prior studies on Web-based technology adoption generally support the effects of personal in-

novativeness on innovation adoption (Busselle, Reagan, Pinkleton, & Jackson, 1999). Lin revealed that an individual's innovativeness attribute is a significant predictor for personal computer adoption (1998) and webcasting adoption (2004). Sun, Youn, Wu, and Kuntaraporn (2006) concluded that innovativeness is an important predictor of online social activities such as forwarding content and chatting with others. More importantly, one relevant study that focused on the social media platform, YouTube, showed that personal innovativeness predicts viewing and sharing of video in the content sharing community website (Haridakis & Hanson, 2009). Therefore:

> RQ8: How is audience innovativeness related to social television viewing via second-screen platforms?

As suggested in the uses and gratifications approach, media compete with other forms of communication or functional alternatives for a finite amount of time among limited audiences (Kaye & Johnson, 2003; Rubin, 2009). The relationship between media and audience is therefore moderated by people's social and psychological circumstances, including lifestyle, life position, and personality. Offline activities like interpersonal interaction and social activities are suggested to play a role in online media use behavior (DiMaggio, Hargittai, Neuman, & Robinson, 2001). Papacharissi and Rubin (2000) found that the greater satisfaction with personal interaction, such as face-to-face communication, people have, the more likely they are to use the Internet for information purposes; whereas those who are not satisfied with face-to-face interaction tend to use the Internet for interpersonal interaction in the virtual world. In the social media context, Haridakis and Hanson (2009) concluded from their empirical study that socially active audiences, particularly those watching for purposes of social interaction and co-viewing, use YouTube as a way of sharing online activities with family, friends and persons with whom they have existing social ties. Accordingly, second screeners' social activities and interpersonal interactions are hypothesized to be salient when using online apps or social media to engage with television content. Thus, this investigation proposes the following research question:

> RQ9: How are audiences' social characteristics (i.e., interpersonal interaction and social activities) related to social television viewing via second-screen platforms?

2.5. Program Loyalty, Time-shifted Viewing, and Product Purchase Likelihood

Television program loyalty is centered on behavioral and attitudinal aspects of television viewers' commitment to certain preferred television programs. Brosius, Wober and Weimann (1992) defined television viewer loyalty along four dimensions: "(a) general loyalty to watching television, (b) channel (or network) loyalty, (c) types of program loyalty, and (d) specific program loyalty"

(pp. 323–324). Research from academia and industry suggests audiences' increasingly cross-platform, multitasking media consumption patterns would help promote program loyalty. When investigating the relationship of cross-media usage with television viewer loyalty, Ha and Chan-Olmsted (2004) assessed the use of enhanced features on television websites such as online video streaming and message boards, concluding that the increase in the number of website features used positively predicts viewer loyalty (i.e., attitudinal loyalty). Lu and Lo (2007) further reported that television audience satisfaction—one element of viewer engagement—strongly predicts repeat viewing intention (i.e., behavioral loyalty).

Time-shifted viewing refers to using digital video recorders (DVRs) to record programs for later viewer and accessing online video services to watch programs scheduled at inconvenient times. Prior research suggested viewing engagement or involvement has much impact on media use and effects, influencing the satisfaction that people receive from media use (Levey & Windahl, 1984), and subsequent planned media exposure (Rubin & Perse, 1987a). Following previous research on viewer engagement and audience satisfaction (Lin, 1993; Perse & Rubin, 1988), the current study posits that audiences' viewing behavior is a temporal gratification-seeking process. The author expects strongly motivated viewers to be actively engaged in social television activities throughout the viewing process, and thus involved with more time-shifted viewing afterwards.

The eventual impact of social television viewing on purchase behavior is a chief consideration of advertisers and marketers. Kilger and Romer (2007) proposed that media engagement, advertising engagement, and brand engagement jointly impact consumers' product purchase intention. When further investigating a set of dimensions of engagement with three media channels (i.e., television, magazines, and the Internet), the authors revealed that there is evidence of a strong relationship between engagement in the media vehicle and the likelihood of purchasing a product advertised within that media vehicle (Kilger & Romer, 2007). Ha and Chan-Olmsted (2001) suggested that there are two types of merchandise available on television networking sites: fan-based items and non-fan-based items. The authors noted that the more television website visitors are exposed to enhanced television features; the more likely they are to show an interest in buying products that have been advertised in the network shows or on the websites. Thus, the corresponding research questions are proposed:

> RQ10: How is social television viewing via second-screen platforms related to viewers' program loyalty?
> RQ11: How is social television viewing via second-screen platforms related to viewers' time-shifted viewing?
> RQ12: How is social television viewing via second-screen platforms related to viewers' product purchase likelihood?

3. Method

3.1. Procedures

Two online consumer panels of 1,010 second screen users were sampled to complete the two-stage research plan: pilot test and main test. The pilot test offered a theoretical rationale for the proposed social viewing construct; the main test was conducted to confirm the scale and test its predictors and consequences by surveying another online consumer panel with 801 qualified respondents. Both panels were managed by a U.S. research company *uSamp*, using an online survey instrument facilitated by the *Qualtrics* software. *uSamp* is a leading online market research company that provides opt-in consumer panels globally with over twelve million online participants. Such consumer panels have been commonly used in market research to investigate consumer behavior toward products and services (Sultan, 2002). The researcher specified a general sample frame as the second screen users over eighteen years old with a range of ages and demographics.

3.2. Television Program Sample

The main test consisted of twenty television programs delivered by major broadcast and cable networks[1]. According to the pilot test results, five most popular program genres were selected: sport events, dramas, reality shows, news, and sitcoms. Considering that second screen television viewing incorporates various social media activities, specific program titles were selected by referring to two online database, *Social Television Charts*[2] and Nielsen Twitter TV Ratings. The first database is a comprehensive television index that incorporates multiple social media activities as public Facebook posts, Twitter mentions, GetGlue check-ins, and Miso check-ins. Nielsen Twitter TV ratings list top-ranked television shows weekly based on audiences' Twitter activities.

3.3. Participants

There were 800 respondents who completed the demographic information in the main test and 209 respondents in the pilot test. The average age in the main test was 39.3 (SD = 13.65), a slightly younger sample than in the pretest (mean age 40.41, SD = 13.96). Males (n = 375) accounted for 46.9% while females totaled

53.1% (n = 425) in the main test. The gender structure of the pilot test was shown to be similar with the main test (male = 48.3%, female = 51.7). Caucasians accounted for 80%, followed by African-Americans (8.2%), Latino/Latina/Hispanics (5.0%), and Asians (4.1%).

4. Measures

4.1. Social Television Viewing

To operationalize the construct of social television viewing, this study uses fourteen items to measure the different manifestations of how television audiences use second screen platforms and mobile apps to engage with television content[3]. The fourteen social engagement items measured the nature of how television audiences take advantage of the capability of second screen platforms to develop a deep, perpetual engagement with television program content and related information, characters or celebrities, and other television viewers through a five-point Likert scale (1 = not at all, 5 = extremely).

4.2. Program Affinity

Two sets of measures—the Television Affinity Scale (Rubin, 1983) and program affinity (Rubin & Perse, 1987a, 1987b)—were adapted to tap respondents' attitudes about their favorite television shows with which they interacted using second screen platforms. The three-item affinity scale was used to assess how important the viewing was and how much affinity the respondents felt watching their favorite shows using statements such as "Watching the program is one of the most important things I do each day or each week". The respondents were asked to indicate their level of agreement with each of the statements using a five-point Likert scale (1 = strongly disagree, 5 = strongly agree).

4.3. Program Involvement

To assess the personal cognitive, affective, and functional dimensions of involvement with a particular television program, four semantic differential items were applied on a five-point scale, including *irrelevant/relevant*, *means nothing to me/means a lot to me*, *doesn't matter/matters to me*, and *nonessential/essential* (Park & McClung, 1986).

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[1] The list of programs: *NCIS, Criminal Minds, Sons of Anarchy, Scandal, Glee, The Walking Dead, Break Bad, Pretty Little Liars, Supernatural, American Horror Story: Coven, Law & Order, Big Brother, The Voice, Survivor, Dancing with the Stars, Real Housewives Series, Duck Dynasty,* and *The Big Bang Theory*.

[2] http://trendrr.tv

[3] The 14 social television viewing items are: I have used apps or the Internet to find program-related info and updates. I have used apps and the Internet to check biography and background of characters/players of the program. I have used broadcast/cable network websites to watch the program through my media devices. I have used the show-specific apps to watch the program through my media devices. I have used broadcast/cable network apps to watch the program through my media devices. I have read the program tweets (including actors, writers, producers, etc.,) in Twitter. I have written or commented on the program tweets (including actors, writers, producers, etc.) in Twitter. I have interacted with my friends about the program through my personal Facebook page. I have written or commented on the program posts in Facebook. I have indicated to "like" the program in Facebook. I have blocked out things around me while watching the program through my media devices. I have lost myself while watching the program through my media devices. I have avoided interacting with others while watching the program through my media devices. I have lost track of time while watching the program through my media devices.

4.4. Program Genre Preference

The current study uses the five popular genres for second screen use for social viewing (commenting, posting, watching, or reading about). They are sport events, news, reality, dramas, and sitcoms. In addition, based on the program that each respondent selected in the main test, this study evaluated participants' overall preference for the program genre of the identified show. Some television program genres studies used the amount of attention paid in watching shows of particular genres as the basis for viewer genre preference (Hawkins, et. al., 2001; Moyer-Gusée, 2010), while others focused on audiences' enjoyment experience or watching likelihood (Moyer-Gusée, 2010). Thus, we adapted two statements focused on viewing attention and enjoyment experience using a five-point Likert scale (1 = not at all, 5 = extremely).

4.5. Compatibility

Perceived compatibility measures "the degree to which the adoption of a technology is compatible with existing values, past experiences, and needs of potential adopters" (Rogers, 2003, p. 15). This study used three items from Tornataky and Klein (1982), Chen et al. (2002), and Chan-Olmsted and Chang (2006). A five-point Likert scale was used to evaluate respondents' level of agreement with each of the statements assessing the variable of perceived compatibility with second screen platforms in general.

4.6. Perceived Ease of Use

The construct of perceived ease of use measures "the degree to which an individual believes that using a particular system would be free of physical and mental efforts" (Davis, 1989, p. 323). Three items were adapted from prior studies to assess perceived ease of use of the second screen devices in terms of learning, skillfulness, and usage through a five-point Likert scale (1 = strongly disagree, 5 = strongly agree) (Davis, Bagozzi, & Warshaw, 1989).

4.7. Convenience

Convenience measures the degree to which a second-screen user perceives that engaging with mobile platforms to interact with television content is free of time and location limits. Adapted from previous scales (Berry et al. , 2002; Ko et al., 2005), the authors formulated four items to measure the construct through a five-point Likert scale (1 = strongly disagree, 5 = strongly agree), including "The media device(s) or mobile apps allow me to interact with television shows whenever I want", "I value the ability of the media device(s) or mobile apps to interact with television shows from the comfort of home".

4.8. User Motives

The social and psychological needs of second screeners to interact with television content are mainly driven by the television program itself, the Internet, and diverse online applications. Therefore, the current study compiled forty-nine motives behind television viewing (Rubin, 1983), Internet use (Papacharissi & Rubin, 2000), and YouTube video viewing (Haridakis & Hanson, 2009). The final set of the 49-item scale represented a range of motives identified by prior studies, including relaxation, companionship, habit, passing time, entertainment, social interaction, information seeking, arousal, escape, convenience, and personal utility. This study asked the respondents to indicate how much each of the motive statements was like their own reasons for using second screen devices to engage with television content through a five-point Likert scale (1 = strongly disagree, 5 = strongly agree).

4.9. Audience Innovativeness

This study adapted Goldsmith and Hofacker's (1991) innovativeness scale to assess audiences' innovativeness with social media systems. The domain-specific scale reflected the tendency to learn about and adopt innovations within a specific domain of interest, which was found to be a valid and reliable measure for different innovations in transnational settings (Goldsmith & Flynn, 1992). The present study modified the six items to reflect the multi-screen social television viewing context and asked respondents to rate their level of agreement with each statement using a five-point Likert scale, including their perceptions and behaviors.

4.10. Social Characteristics

Adapted from the previous studies on contextual age scales (Rubin, 1986; Rubin & Rubin, 1986, 1989), the present study measured two dimensions of social characteristics of the respondents, including the level of interpersonal interaction and offline social activities. The respondents rated their level of agreement (1 = strongly disagree, 5 = strongly agree) with four statements assessing their interpersonal interaction (e.g., "I have ample opportunity for conversations with others"), and five statements to measure their offline social activity (e.g., "I often participate in the meetings or activities of clubs, lodges, recreation centers, churches, or other organizations").

4.11. Program Loyalty

Program loyalty, operationalized as attitudinal loyalty, was focused on stated recommendations, preferences, or probabilities of viewing by the audiences, thus emphasizing the cognitive element of program loyalty. The three items were stated as "recommending the program

to others", "thinking of himself/herself as a loyal viewer of the show", and "willing to watch the show rather than other programs".

4.12. Time-Shifted Viewing

This study measures time-shifted viewing through two popular platforms: DVR recording and online video streaming services such as Netflix, Hulu Plus, and Amazon Prime. The first statement asked the participants if they had used DVR or online video services to catch up on past episodes of the show they missed over the past month. The second item measured the time-shifted viewing intention of the show in the future among the respondents.

4.13. Product Purchase Likelihood

This study examined respondents' purchase likelihood of products from their program's official website. There are usually two types of merchandise available: fan-based items and non-fan-based items. The fan-based items are items relevant to the networks or its shows and stars, while non fan-based items are products of the advertisers on the networks (Ha & Chan-Olmsted, 2004). Viewers' purchase intentions toward the two types of products were discovered by three items using a five-point Likert scale (1 = definitely not, 5 = definitely) to assess whether the respondents would be more likely to buy memorabilia.

5. Results

5.1. Motivations behind Social Television Viewing via Second-Screen Platforms

RQ7 asked what motives audiences have for using second screen platforms to engage with television content. To answer the research question, the exploratory factor analysis (EFA) procedure was carried out to analyze the forty-nine motive statements. The factor analyses were performed on a polychoric correlation matrix using the maximum likelihood with mean and variance estimation procedure through an oblique Geomin rotation by *Mplus* program. By analyzing the screen plots and goodness of fit indices, a series of models was estimated and compared. A ten-factor model showed the best fit ($\chi^2 = 711.369$, $df = 290$, $p = .000$; CFI = .982, TLI = .964, RMSEA = .042, SRMR = .011). Thus, this study concluded that the ten-factor solution best describes the motive test.

The EFA yielded ten motives behind social engagement behavior, corresponding to previous television viewing motives (Rubin, 1983), Internet use motives (Papacharissi & Rubin, 2000), and YouTube video viewing motives (Haridakis & Hanson, 2009). The first factor, *relaxation*, was comprised of three items related to a pleasant rest and relaxation-driven motivation. The second factor, *companionship*, described relief from aloneness

as a reason for social engagement behavior. The third factor, *passing time*, described how television audiences use the second screens to interact with television content out of habit and to occupy time. The fourth factor, *entertainment*, was comprised of three items illustrating the experience of social engagement with television content for amusement and enjoyment. The fifth factor, *interpersonal connection*, was comprised of six items related to using mobile devices to be involved with television programs that measured belonging, inclusion, affection, social interaction, and expressive needs. The sixth factor, *learning*, reflected learning unknown and useful things as a motivation for social engagement behavior. The seventh and eighth factors contained three items describing the *arousal* and *escape* motives. The ninth factor, *information*, explained how the social engagement experience is derived from being informed. The last factor, *access*, measured the use of the second screens to access television content, because it is easier and a novel way of searching for information and keeping up with current issues.

Based on the motive factor structure, the author conducted reliability testing for each motivation using Cronbach's coefficient alpha. The acceptable value for Cronbach's coefficient is above .70 (Kline, 2011). The Cronbach's coefficient alpha values for the ten motives behind using mobile devices to engage with television content ranged from .872 to .937, suggesting that the ten motivation scales are reliable measures. Table 1 presents the descriptive statistics, Cronbach's coefficient alpha, and correlations for the ten motive factors.

5.2. Antecedents to Social Television Viewing via Second-Screen Platforms

Significant antecedents to social television viewing included program affinity ($\gamma = .464$, $p < .01$), ease of use ($\gamma = .110$, $p < .05$), compatibility ($\gamma = .123$, $p < .1$), convenience ($\gamma = .132$, $p < .1$), the motive of interpersonal connection ($\gamma = .228$, $p < .01$) and arousal ($\gamma = .126$, $p < .05$), as well as interpersonal interaction ($\gamma = .109$, $p < .05$). The results indicated that program-related variables like program affinity are positively associated with social television viewing behavior. Viewers who possess strong affinity toward the program and perceive it as more important and relevant in their daily lives tend to actively utilize the second screens to interact with television content.

Furthermore, media characteristics of second screen platforms, such as perceived ease of use, compatibility, and convenience, play an important role in predicting the social engagement experience with television. The results suggested that superior features and functions embedded in mobile devices like smartphones and tablets significantly promote users' social television viewing activities, because these second screen devices are easy to use, convenient to possess and access, and compatible with their life styles.

Table 1. Descriptive statistics, internal consistency values, and intercorrelations for motive factors.

Factor	Motive	No. of Items	Mean	SD	Alpha	1	2	3	4	5	6	7	8	9	10
1	Relaxation	3	3.64	.95	.937	1.000									
2	Companionship	3	2.95	.99	.911	.380*	1.000								
3	Pass Time	3	3.38	1.03	.897	.274*	.479*	1.000							
4	Entertainment	3	4.09	.72	.900	.590*	.212*	.269*	1.000						
5	Interpersonal Connection	6	3.33	.96	.923	.499*	.482*	.301*	.394*	1.000					
6	Learning	3	3.05	1.10	.901	.433*	.523*	.248*	.250*	.591*	1.000				
7	Arousal	3	3.44	1.07	.914	.552*	.369*	.236*	.585*	.545*	.539*	1.000			
8	Escape	3	3.10	1.10	.872	.445*	.597*	.434*	.317*	.535*	.554*	.522*	1.000		
9	Information	3	3.92	.82	.889	.310*	.181*	.312*	.408*	.352*	.252*	.264*	.279*	1.000	
10	Access	3	3.76	.88	.908	.356*	.298*	.278*	.376*	.32*	.406*	.376*	.318*	.674*	1.000

Note: alpha = Cronbach's alpha; * $p < .05$ (two-tailed). n = 805.

Interpersonal interaction rather than offline activity appeared to be significantly predictive of the social engagement experience. The results suggested that even though individuals have ample opportunities to interpersonally communicate with friends, family, relatives, or others in their offline lives, they desired to further engage in their communication with other audience members with different levels of social activities "surrounded" or "submerged" in a television program in the virtual space. By contrast, offline social activity did not exhibit any influences on social viewing tendencies.

In terms of motivations for social viewing behavior, the results showed that interpersonal connection and arousal are two salient positive predictors. It seems people driven by interpersonal connection and arousal needs tend to be more likely to use second screens to interact with television content. In summary, perceived attributes of second screen platforms, program affinity, the audiences' interpersonal connection and arousal motivations, and their interpersonal interaction attributes appeared to be significant predictors of the social television viewing experience. The causal relationships are presented in Table 2.

5.3. Consequences of Social Television Viewing via Second-Screen Platforms

RQ 10 through RQ12 pertained to possible consequences of social viewing activities, including program loyalty, time-shifted viewing, and product purchase likelihood. As shown in Table 3, social television viewing was a significant and substantial predictor for all three post-viewing activities. Social engagement behavior demonstrated positively predictive power on all proposed consequences: program loyalty ($\gamma = .457$, $p < .01$), time-shifted viewing ($\gamma = .613$, $p < .01$), and product purchase

Table 2. Antecedents to social television viewing via second-screen platforms.

	Antecedents	Social Engagement Standardized path coefficient	SE
RQ1	Program affinity	**.464***	.070
RQ2	Program involvement	−.080	.055
RQ3	Genre preference	.012	.031
RQ4	Compatibility	**.123***	.064
RQ5	Perceived ease of use	**.110****	.052
RQ6	Convenience	**.132***	.068
RQ7	Relaxation	.001	.046
RQ7	Companionship	.005	.055
RQ7	Pass time	.026	.042
RQ7	Entertainment	−.019	.057
RQ7	Personal Utility	**.228***	.065
RQ7	Learning	−.036	.063
RQ7	Arousal	**.126****	.058
RQ7	Escape	−.010	.055
RQ7	Information	−.024	.052
RQ7	Access	−.066	.061
RQ8	Innovativeness	.117*	.076
RQ9	Interpersonal interaction	**.109****	.049
RQ9	Social activity	.061	.057

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ (two-tailed). The goodness of fit indices: $\chi^2 = 46119.29$ ($df = 3916$, $p < .001$); CFI = .944, TLI = .939, RMSEA = .029, SRMR = .047.

Table 3. Consequences of social engagement.

	Consequences	Social Engagement	
RQ10	Program Loyalty	Standardized path coefficient	**.457***
		SE	.048
RQ11	Time-shifted Viewing	Standardized path coefficient	**.613***
		SE	.034
RQ12	Product Purchase Likelihood	Standardized path coefficient	**.663***
		SE	.028

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ (two-tailed). The goodness of fit indices: $\chi^2 = 46119.29$ ($df = 3916$, $p < .001$); CFI = .944, TLI = .939, RMSEA = .029, SRMR = .047.

likelihood ($\gamma = .663$, $p < .01$). The results appear to provide definite support for the economic importance of social television viewing.

6. Discussion and Implications

This study presents an active audience behavioral model, which integrates the theory of television program choice, technology acceptance model, innovation diffusion theory, and the uses and gratifications approach. The main purpose of the integration is to offer a comprehensive framework to better understand why television audiences are actively involved with various second screen platforms to connect with television content, and what the possible outcomes of this social viewing experience are. The first benefit of the integrated approach for active audience behavior is that it provides a comprehensive picture to better understand the social television engagement process. As suggested in the audience behaviorist research tradition, audiences are variably active across several qualitative dimensions and along the temporal dimension before, during, and after media exposure (Rubin, 1987a, 1987b). Thus, the present study first approaches the multimedia television consumption pattern by validating the qualitative dimensions in social television viewing engagement. This study then examines the temporal dimension of before, during, and after the social television viewing behavior.

Another benefit of the integrated framework is that it presents a good basis for comparing the strengths and weaknesses of each theoretical branch that forms the active audience behavior model. Specifically, this investigation identifies three categories of explanatory factors to predict the social viewing experience from the perspectives of media content (i.e., perceptions of television programs), media channel (i.e., perceived characteristics of second screen platforms and enhancement apps), and media user (i.e., audience attributes). The predictive ability of each factor is tested and compared in predicting social television viewing patterns. At the same time, the predictive effects of social viewing on the following proposed consequences are evaluated, including program behavioral and attitudinal loyalty, time-shifted viewing, and product purchase likelihood. In particular, by assessing the strengths or weaknesses of different determinants, the current study could identify which predictors play more significant roles for social viewing behavior. Most importantly, the findings demonstrate that the social television engagement process is a composite result, which is determined by multiple components jointly under the integrated framework of active audience behavior.

Regarding the significant predictors of social engagement, this study identifies the following determinants: program affinity, perceived ease of use, compatibility, convenience, the motive of interpersonal connection and arousal, as well as the individual's interpersonal interaction attributes. Program affinity is strongly predictive of social engagement behavior. The findings here are indicative of the value of content, implying that "content is still king" in multi-screen television consumption environments. In the contemporary interactive video consumption environment, the definition of television content expands to a broader scope, including the core program and its ancillary information, the characters, celebrities, and other media persona of the program, and even content-related media activities. Accordingly, the deepest level of social engagement is driven by the quality of content, regardless of format and media platform. Thus, how to develop the best strategy to foster viewer affinity towards a television program becomes the most critical issue.

Regarding perceived media characteristics of the second screens, all proposed attributes such as perceived ease of use, convenience, and compatibility are found to be salient determinants of social viewing behavior. The results are not unexpected as the mobility and functionality delivered by these platforms empower television viewers. Ease of use and convenient access to television content suggest perceived characteristics of the second screens might become less pertinent as consumers become more technologically proficient with new devices. Therefore, the perceived compatibility of media devices and online enhancement apps will be more relevant to user lifestyles and value systems, playing a larger role in the social television adoption process. Moreover, it is interesting to note that many second screeners attach emotions or feelings with their mobile devices, representing emotional engagement with these companion devices. Particularly, in the social viewing context, second screeners tend to voice more emotional importance for phones than tablets or laptops—reflecting their role as an omnipresent extension of the self. It was not uncommon for the participants to describe their relationship with the smartphone as one of ambivalent dependency: "It's my life—everything's on there" and "We spend too much time on our phones".

Under the context of social television viewing through second screen devices, the audience dispositional factor, innovativeness, did not play a role in the social television viewing adoption. It might be attributed to the fact that smartphones and tablets have achieved mass-market acceptance, and mobile device ownership has progressed from leading edge and early technology adopters to those less motivated by innovative technologies. These individuals were found to have more traditional views on device use and do not necessarily adopt the same device use behavior as technology mavens (Loechner, 2013). Accordingly, in comparison to those media attributes soliciting curiosity, initiative, and demanding skills, social television viewers more value such characteristics delivered by their mobile devices as perceived ease of use, convenience, and compatible with their lifestyle. The findings here resonate with a latest industry survey, suggesting that all age groups of the U.S. adults are increasingly engaged in multitasking behavior

while watching television; the growing trend is apparent across three defined categories of technology adopters based on their innovativeness (i.e., leading edge, early adopters, and proven technology) (Loechner, 2013).

The empirical validation of the predictive ability of interpersonal interaction to social engagement is particularly interesting. The predictive effect of interpersonal interaction is significant and positive on social viewing behavior. This discovery implies that audiences, who do have ample opportunities or are satisfied with their interpersonal communication, would still be inclined to utilize various online/mobile platforms to interact with media figures and other audience members related to their favorite shows. Social interaction between viewers and media figures is to some degree a type of parasocial interaction, in which viewers believe they know the media persona as they do a friend, treating the interaction as an interpersonal relationship. Thus, the empirical findings provide evidence in support of the social enhancement premise advanced in prior research, which states that extroverted and outgoing persons are motivated to add online contacts to their established large network of offline friends (Zywica & Danowski, 2008). The findings here may challenge results from those previous studies based on media compensation hypotheses, suggesting that people who are less sociable and dissatisfied with face-to-face interaction are more likely to use media as compensation (e.g., Papacharissi & Rubin, 2000).

This study found that two motives, i.e., interpersonal connection and arousal, are significantly predictive of social television engagement behavior. The social reason for interpersonal connection is intriguing because it highlights the socially interactive nature of television viewing facilitated by second screen devices. The underlying elements of interpersonal connection motives suggest that people who are using mobile devices and enhancement apps to be involved with television content are mainly driven by belonging, inclusion, affection, social interaction, and expressive needs. Through posting, sharing, feedback and recommendations, mobile devices and social media transcend time and space and create a space for conversations among viewers. The results again suggest social television is a means of communication and social interaction in the context of watching television or accessing television-related content, and support Askwith's (2007) and Russell, Norman, and Heckler's (2004a, 2004b) research regarding the social interaction nature of television viewing.

In addition, to investigate the predictive effects of social television viewing, this study further proposes three consequences of the process: program loyalty, time-shifted viewing, and product purchase likelihood. The social television viewing activities are found to have significant impacts on all proposed outcomes. The findings are consistent with prior research from academia and industry suggesting audiences' cross-platform, multitasking media consumption patterns help promote program loyalty (Ha & Chan-Olmsted, 2004; Lu & Lo, 2007), im-

prove the likelihood of product purchase (Kilger & Romer, 2007), and boost time-shifted viewing. Overall social viewing behavior bears the strongest positive relationship with the likelihood of purchasing products that have been advertised on the program's station and network websites. As suggested by prior study (e.g., Ha & Chan-Olmsted, 2004), however, it is still challenging for television managers who plan to utilize their website and online apps as a platform to conduct e-commerce due to audiences' general lower interests and experience in television e-commerce. Similarly, Lin and Cho (2010) examined the effects of television audiences' cross-media usage, discovering that cross-media involvement with televised programs could improve the program loyalty and further promote product purchase intention. However, the authors admitted that television e-commerce and interactive online product placement on the program's official website are still underutilized by the current online users (Lin & Cho, 2010).

7. Limitations

This study offers valuable findings related to utilizing second screen platforms to engage with television content over time. However, there are several limitations that should be taken into account when evaluating and interpreting the conclusions. While the use of online consumer panels sampled from the online population helps enhance the external validity of the findings, these results should not be generalized to *all* online users or *all* television viewers. Given the research questions in this study necessitated the use of a purposive sample of online users who engage in second screen experiences related to television viewing, these findings are not necessarily applicable to all online consumers or all second screeners. Additionally, as discussed previously, this study identifies three major exploratory factors of social television viewing from the perspectives of media content, media platforms, and audience attributes. Thus, the theoretical and practical implications of this investigation also center on these aspects. There are other external factors such as program availability issues that might impact the adoption process. Therefore, it is necessary to take these external factors into account when interpreting the social television viewing process.

Conflict of Interests

The author declares no conflict of interests.

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Article

Audience-Centric Engagement, Collaboration Culture and Platform Counterbalancing: A Longitudinal Study of Ongoing Sensemaking of Emerging Technologies

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Abstract
Digital journalism studies have done little in terms of studying longitudinally the interrelationships between emerging technology and convergent news practices. This study addresses that void by using a sensemaking approach to examine how emerging technology was appropriated and enacted in the convergent news activities of newsworkers, and how they made sense of the emerging technologies over two and a half years. Our study analyzes two newsrooms in Singapore: 1) a digital-first legacy newspaper, and 2) an independent digital-only news startup. This article employs the Infotendencias Group's (2012) analytical framework and its four dimensions of news convergence: i) business, ii) professional, iii) technological, and iv) contents. Additionally, it proposes and employs a fifth dimension: v) audience-centric engagement. The fifth dimension is based on the concept of "measurable journalism" (Carlson, 2018), analyzing how its actors influence the relationship between newsrooms and their audiences. This study builds on two rounds of in-depth interviews conducted from end-2015 to mid-2016, and again in 2018. Our findings show that audience-centric-engagement practices are observed in all four dimensions of convergent news activities of each news organization, and leads to three main conclusions: 1) the growing significance of *audience-centric engagement*, 2) an emergence of a *collaboration culture*, and 3) the salience of *platform counterbalancing*.

Issue
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1. Introduction

Emerging technology possesses the potential to impact the situation for news work and the place journalism has in society. This thematic issue studies how emerging technology has enabled new forms of public engagement, new user interfaces and contents, changing professional practices in news work, and their legal and economic implications. Digital journalism studies have shown how journalists and the news media are struggling to maintain their professional position and their position in the market, exploring and experimenting with automated journalism, mobile news, citizen journalism, live blogs, big data, crowdsourcing, paywalls, hyperlocal journalism, digital analytics, and audience engagement (e.g., Franklin & Eldridge, 2017; Witschge,

Anderson, Domingo, & Hermida, 2016). Ultimately, both the practice and study of digital journalism are continuously changing. Yet, there are relatively few studies that trace the actions and beliefs of newsworkers over time in the salient case of journalism and emerging technology. This article presents data from a two-and-a-half-year longitudinal study that applies a sensemaking approach entailing analyses of newsworkers' *actions* and *beliefs* in relation to the use of emerging technology over time (Weick, 1995; cf. Westlund, 2011) to examine four previously identified forms of convergence in journalism (Infotendencias Group, 2012), and also a fifth, audience-oriented form (Carlson, 2018). The study empirically examines two types of news publishers: a 'digital-first' legacy news organization (LNM), and a 'digital-only' news startup (DNS), hereafter referred to using the acronyms. Media scholars have been paying attention to emerging technology (and the technologists associated with them) and its relationship with news practices (e.g., Baack, 2018; Westlund, 2011), including tensions and negotiations taking place among diverse social actors in the news organization in relation to emerging technology and innovation (Krumsvik, Milan, Bhroin, & Storsul, 2019; Nielsen, 2012; Westlund, 2012a; Westlund & Krumsvik, 2014) as well as in relation to potentially active participants (Lewis, 2012; Westlund, 2012b). Nonetheless, while journalism studies scholars have a growing interest in researching the role and influence of emerging technology in entrepreneurial journalism and DNSs (e.g., Carlson & Usher, 2016; Witschge & Harbers, 2018), most studies have focused on the digital transformations occurring in LNM. Thus, in terms of relative proportions in sheer amounts of studies, scholars have largely neglected the interplay between emerging technology and small news companies (exceptions include Ali, Schmidt, Radcliffe, & Donald, 2018), including DNSs. Still, in 2018, researchers have successfully argued that DNSs (i.e., digital native news websites) continue to grow in importance, and that researchers must study them (Canter, 2018). In recent years, scholars have studied DNSs such as BuzzFeed (Tandoc & Yuan, 2018) and De Correspondent (Harbers, 2016), finding that they are more willing to experiment with new technology and pay more attention to their audiences. Moreover, scholars have also begun re-examining the methods and ways to study the news values of digital-born news organizations (Canter, 2018).

There are relatively few studies of news organizations taking a longitudinal approach (exceptions include Nel & Westlund, 2013; Nelson & Tandoc, 2018; Westlund, 2011, 2012a). To date and to our best knowledge, digital journalism studies have done little in terms of studying and comparing the interrelationships between emerging technology and convergent news practices in both these types of news organizations, and especially so when it comes to research designs with a longitudinal approach towards change and persistence over time. DNSs differ from LNM: DNSs possess little overheads and a few

staff; have flat organizational hierarchies; have evolved distinct newsroom cultures that thrive on chance-taking and creativity; and receive funding from investors or large companies rather than banks and traditional funding streams (Boyles, 2016; Usher, 2017). Given their differences in structures, practices, and cultures, it is imperative to do so. This article seeks to address this research void. In doing so, this essay adopts a non-technologically deterministic position and acknowledges that emerging technology possesses the potential to influence—but not govern—the transformation of news practices.

This article applies a sensemaking approach to examine one LNM and one DNS, with the aim of understanding how emerging technology has been appropriated and enacted over time in the salient case of news publishers. Both news organizations examined in this article are located in Singapore, which has a domestic market of about 5.6 million people. The island-state has one of the world's most developed information and communication technology (ICT) infrastructures and is ranked among countries with the highest global internet and mobile penetration rates (We Are Social, 2018). Singapore has an idiosyncratic news environment. The country's mediascape is dominated by two LNM companies, Singapore Press Holdings (SPH) and MediaCorp, which the country's elected government maintains a powerful influence over (Duffy, Ling, & Tandoc, 2018). Since the early 2000s, there has been a flourishing of news websites and applications, developed by both local LNM organizations and independent DNSs (Lau, Lin, & Low, 2013; Tan, Tng, & Yeo, 2015). Therefore, Singapore's evolved ICT infrastructure, high degree of digital connectivity, and burgeoning space for digital journalism make it a suitable environment in which to examine the interrelationships between emerging technology and news practices, and the manner in which news professionals make sense of the phenomenon.

This article includes two rounds of semi-structured in-depth interviews conducted with a total of 13 newsworkers over two and a half years. This diverse group of social actors in news organizations (cf. Lewis & Westlund, 2015) included senior editors, reporters, digital graphic illustrators, videographers, and newsroom managers. The first round of interviews with the 13 social actors took place from end-2015 to mid-2016. In mid-2018, more interviews were done with four newsworkers who had participated in the initial round. All in all, this article contributes to the body of research on emerging technology and news convergence in three distinct ways. First, it provides an in-depth comparison of how emerging technology is being approached by news workers in two distinct types of news organizations. This goes beyond most studies that focus on LNM, and provides vital insights into the interrelationships between emerging technology and news practices of DNSs. Secondly, this article presents a fifth form of convergence—*audience-centric engagement*, which has been developed by drawing on the concept of "measurable journalism" (Carlson, 2018)

that considers the use of digital analytics in quantifying news consumers. Third, by comparing the changes in the sensemaking patterns of newsworkers in each news organization over time, we achieve a deeper analysis of their actions and beliefs towards the use of emerging technology.

This article is organized into five main sections. Next follows the second section: an outline of our analytical framework and approach, discussing also applicable literature. Thereafter, we turn to the third section, presenting method and material for our two case studies in Singapore. The fourth section focuses on reporting the findings for each of the two research questions. Conclusions and a discussion of future research close the article.

2. Analytical Framework and Approach

This article adopts a sensemaking approach as developed by Weick (1995). By adopting this approach, we refer to a research design and analysis focusing on personal *actions* and *beliefs* taken *over time*, amongst a selection of key representatives in news media firms (e.g., Westlund 2011, 2012a). In doing so, the article applies and further expands on the Infotendencias Group's (2012) analytical framework on four dimensions of convergence by adding a fifth, audience-centered dimension. In the sub-sections that follow, we outline and discuss each of these, closing with a synthesis.

2.1. The Sensemaking of Emerging Technology in Journalism

Sensemaking is a constructivist approach focusing on how members of organizations engage in diverse kinds of sensemaking patterns as they grapple with what they are doing inside their organizations, and what is going on beyond it. The sensemaking approach is especially applicable to the study of organizational change and emerging technology in media companies as it provides a lens through which we attain an in-depth understanding of how newsworkers, through patterns of interpreting, negotiating and acting, make sense of the transformations happening around them. Importantly, in seeing organizations as sensemaking systems, members within these systems are continuously trying to interpret emerging changes in relation to that which is more familiar, and to make them comprehensible and predictable (Weick, 1995). Examples include their experiences and routines for working with emerging technologies, or what Powers (2012) refers to as "the emergence of technologically specific forms of work" (p. 28). The sensemaking approach has been applied to the study of emerging technology in journalism. In a three-year longitudinal study, Westlund (2011, 2012a) showed how diverse social actors from different departments—editorial, business and IT—within a news organization displayed heterogenous sensemaking patterns and drew on their prior experiences from their news work, especially those gained from work-

ing on news websites, when implementing their publication's mobile application. Furthermore, Weick (1995) suggests sensemaking can be used to examine how people retrospectively make sense of changing events through a continuous process of construction, classification, interpretation and conclusion. He argues that organizations may be viewed as "sensemaking systems" (p. 164), and that change management in organizations involve a tension between innovation (new practices) and control (old methods). In analyzing transformations, actors involved seek to assert control of "old" methods, which leads to a continuous reconciliation of these two opposing views (Weick, 1995; cf. Westlund, 2011). Additionally, Weick (1995) highlights that *actions* and *beliefs* underscore organizational sensemaking patterns. *In action-driven* process, actors make meaning to justify the actions they have *committed* to, or to gain a sense of cognitive coherence about their actions they have performed to *manipulate* their environments (Choo, 1996, cf. Westlund, 2011). In *belief-driven* patterns, people *argue* about their beliefs when they find that they are in conflict with current situations, or use beliefs as *expectations* to guide their understanding of evolving events occurring around them through a process of connecting new meaning to old understanding.

Importantly, this article uses the sensemaking approach as an overarching conceptual lens just as much as a way to position our stance on theory of science. It guides how we approach the epistemological nature of knowledge produced through interviews with newsworkers as systems of sensemaking (cf. interpretive systems). Thus, we do not here claim to capture an ontological reality, but instead, focus on socially constructed accounts about how newsworkers approach, engage and negotiate with emerging technology through *actions* and *beliefs*. The sensemaking approach is used to present a holistic understanding of the interrelationships between emerging technology and news work over time.

2.2. Journalism and Convergence: An Analytical Framework

Defined as the "combination of technology, products, staffs and geography among previously distinct provinces of print, broadcast and online journalism" (Singer, 2004, p. 3), scholarship on journalism convergence may be grouped into three areas. The first area analyzed news convergence as a *product*. In the 1990s, scholars opined that the blurring of the lines between different forms of traditional media represented the catalyst behind the surge of digital multimedia. Pavlik (1996), for instance, viewed convergence as the "coming together of all forms of mediated communications in an electronic, digital form, driven by computers" (p. 132), and Winseck (1998) argued that convergence entailed the gradual combination of ICTs and telecommunications. The second area conceptualized news convergence as a *process* that occurs in multiple phases. Au-

thors such as Boczkowski (2004) stressed that convergence is an accidental process involving multiple paths influenced by technological, local, and environmental factors. Dailey, Demo and Spillman (2005) proposed a five-stage continuum of news convergence that illustrated a gradual process of cooperation and integration between newsworkers, and highlighted that all newsrooms would need to gradually experience the various stages before achieving "full convergence" (Dailey et al., 2005, p. 152). The underlying and normative assumptions that total integration was desirable in patterns of news work was, of course, contested.

Partly as an extension to research in the first and second areas, journalism scholarship adopting a *multidimensional* approach to news convergence emerged as a third area. Researchers have argued that a thorough understanding of convergence can only be attained through an all-round approach that examines how every element of the complex, interconnected system—an organization's technology, products, content, staffs, geography, business strategy, and interaction with their audiences—exerts a reciprocal influence on each other (Domingo et al., 2007; Infotendencias Group, 2012; Singer, 2004). In 2012, a group of Spanish academics formed a research consortium, the Infotendencias Group, and proposed a model that consisted of four main types of news convergence:

1. *Business convergence* analyzes the corporate strategies of a news organization, including newsroom integration and new forms of logistical arrangements designed to increase productivity;
2. *Professional convergence* looks at skills polyvalence, which refers to a journalist's multimedia and multi-tasking expertise;
3. *Technological convergence* emphasizes "cross-media" and "multiplatform" news production and dissemination—a trend seeing news companies adopting new production patterns, including multimedia content management systems that facilitate news publishing on multiple platforms simultaneously;
4. *Convergence of contents* focuses on the impact of increasing demand for multimedia news on media organizations' production and dissemination strategies.

In light of the four A's (see Lewis & Westlund, 2015), this analytical framework allows for a broad analysis of social actors and technological actants in diverse activities related to convergence. While the Infotendencias Group's (2012) framework represents a multidimensional model for examining news convergence, it omits the dimension of the audience and hence, does not address the different ways social actors approach their audiences. Thus, next we propose a fifth, audience-oriented dimension to the analytical framework.

2.3. Expanding the Analytical Framework : Audience-Centric Engagement

News audience scholarship has stressed that audience participation has become a "key strategic question" (García-Avilés, Kaltenbrunner, & Meier, 2014, p. 582) in understanding newsroom dynamics in LNM and DNSs (Bruno & Nielsen, 2012). A 2018 thematic issue of *Media and Communication* expands our gaze onto how news media have approached participation for proprietary vis-à-vis non-proprietary platforms, including its assumed positive aspects and its often-overlooked dark aspects (see Westlund & Ekström, 2018), which have been elegantly conceptualized as "dark participation" (Quandt, 2018). Much engagement with active audiences nowadays takes place via social media platforms non-proprietary to the news media, and scholars and practitioners alike do well in questioning assumptions about the nature of such participation (Lewis & Molyneux, 2018).

Carlson (2018) argues that as more newsrooms adopt more complex digital methods of quantifying and tracking their online audiences in real-time, greater attention must be paid to how the factors of materiality, practice, culture, and economics shape the relationship between newsrooms and their audiences. To this end, Carlson outlined eight dimensions of measurable journalism: (i) *material*—digital news infrastructures and digital analytics software; (ii) *organizational*—new roles in newsrooms responsible for analyzing and reacting to the metrics, and new types of digital service providers; (iii) *practice*—new audience engagement methods and the use of data in news decisions; (iv) *professional*—concerns over journalistic autonomy that includes the acceptance or resistance towards audience metrics; (v) *economic*—the use of data to monetize content, make resource decisions and facilitate advertising; (vi) *consumption*—introducing content recommendation algorithms to personalize content for audiences; (vii) *cultural*—wider concerns and debates over the use of story performance metrics as the deciding factor in determining newsworthiness (e.g., Carlson, 2017, on meta-journalistic discourse and ultimately also journalistic authority); and (viii) *public policy*—concerns over data security and privacy issues. Carlson (2017) stressed that these eight dimensions are "mutually constitutive" (p. 409) and researchers should approach them holistically rather than avoid over-emphasizing any element.

2.4. Synthesis and Study Rationale

Emerging technology has been considered an important component of the sensemaking approach (Weick & Meader, 1993), and the sensemaking approach is suitable for examining emerging technology, innovation and change management in organizations *over time* (Choo, 1996; Weick, 1995; Weick & Meader, 1993). To date,

there are few studies that longitudinally analyze the interrelationships between emerging technology and convergent news practices concerning shifting *actions* and/or *beliefs*. By longitudinal, we here refer to having at least two consecutive points of data gatherings with the same news publishers and similar sets of representatives, enabling analysis of changes over time (see Nelson & Tandoc, 2018, for a similar research design). In extension of the above, this study synthesizes the sensemaking approach with the analytical convergence framework to, firstly, examine how the newsworkers in a LNM and a DNS engaged with emerging technology in practices related to the five dimensions of convergence, and secondly, analyze how the newsworkers made sense of emerging technology over two and a half years. Correspondingly, this study asks these two research questions:

RQ1: How did the newsworkers say emerging technology was *appropriated and enacted* in their convergent journalism practices over time?

RQ2: How did the newsworkers *make sense* of key emerging technologies over time?

3. Method and Material

Case study is an optimal method for in-depth examining of contemporary phenomena within their real-life context (Yin, 2018). This study adopted Yin's (2018) case study method that involved two rounds of semi-structured, in-depth interviews over two and a half years. The study applied a longitudinal approach because the sensemaking of developmental trends, such as the interaction between emerging technology and news practices, requires examination of the same group of people over time (cf., Westlund, 2011, 2012a). The first round of interviews with 13 newsworkers—editors, reporters, designers, photographers and videographers—was conducted from end-2015 to mid-2016 (hereafter collectively dated as 2016). In mid-2018, four newsworkers (three from the LNM, and one from the DNS company) who had been interviewed in 2016 were interviewed again. They were selected for two reasons. Firstly, three of them were senior editors in their respective news organizations who were directly involved in implementing emerging technology, and one was a middle-level manager at the LMN who had experienced using new technology both as a reporter and editor. Secondly, some participants from 2016 were unavailable because they either had resigned, declined to be interviewed, or, in the case of the LNM, been given new roles due to restructuring that were not relevant to this study. While the data collected in 2016 was part of a separate study (Chua, Goh, & Lin, 2018), it was similarly focused on the convergent journalism practices and application of emerging technology in both news organizations, and hence, afforded a retrospective (sensemaking) approach during the interviews in 2018. Each interview lasted between 45

to 60 minutes and in total produced almost 1,000 minutes of data. Interviews with the LNM newsworkers in 2016 and 2018 took place in the participants' offices, including their meeting rooms and at their desks, and gave the first author the opportunity to observe the participants' working environments, take notes, and follow-up with questions about the observations. Interviews with the DNS newsworkers took place in public places as they did not occupy a permanent office during both instances. To augment the interview data, the first author regularly recorded notes and tracked significant changes in the content and services of the digital news products (websites, mobile apps, electronic newsletters, and social media platforms) for each publisher. In November and December 2018, the DNS (*The Online Citizen*) was forced to temporarily suspend operations as its equipment was seized by the Singapore Police Force, and its editor-in-chief prosecuted for criminal defamation over publishing an editorial that criticized the Singapore government. Public donations (i.e., crowdfunding) enabled the DNS to resume operations a week after the seizure occurred. However, this complicated final follow-up interviews in December 2018.

3.1. Case Selection

Theoretical sampling was used in selecting two cases: *The Straits Times* (ST), a 172-year-old LNM owned by media conglomerate Singapore Press Holdings (SPH), and *The Online Citizen* (TOC), a 12-year-old DNS. They represent unique cases that differ in funding models, business strategies, operations, size, culture, and leadership. Their distinct traits make them suitable cases for comparing sensemaking patterns and convergent news practices vis-à-vis their use of emerging technology.

ST was founded in 1845 and employs about 300 staff. It is Singapore's most-read English newspaper and had, until 2017, a market capitalization that was larger than that of the New York Times Company (Yap, 2017). Since 2013, ST has been transforming itself from a print-focused newspaper to a digital-first news organization (Fernandez, 2015). In comparison, TOC started operations in 2006, has employed no more than 10 full-time staff since its inception, occasionally relied on volunteers to assist in news production, and struggled to remain financially viable (Sim, 2016). For revenue, TOC relies on multiple sources, including digital advertising, reader contributions, online crowd sourcing, and organizing citizen journalism training workshops and seminars for social activists (Hicks, 2015).

3.2. Data Analysis

The interview questions in 2016 and 2018 were designed to focus on how emerging technology was appropriated and enacted in the convergent news practices in both ST and TOC. Furthermore, Weick (1995) argues that sensemaking constitutes *enactment*—the ongoing process of

one acting on one's own beliefs to confirm his or her predictions about the future. Hence, to understand how the newsworkers made meaning of emerging technology in their work through their *actions* and *beliefs* over time, the 2018 interview questions were left open-ended and explicitly probed interviewees on developments regarding the appropriation and enactment of emerging technology in their newsrooms, and requested them to reflect on their responses in 2016. All interviews were recorded digitally and transcribed verbatim, and then coded according to the five dimensions of journalism convergence to identify how emerging technology was appropriated and enacted in their journalism over time. "Measurable journalism" (Carlson, 2018) was not employed as the fifth dimension of news convergence in the 2016 study. However, the similar focus of both the 2016 and 2018 studies in examining ST's and TOC's approaches towards quantifying and engaging online audiences afforded both sets of data to be similarly coded according to the aspects of "measurable journalism". Thereafter, based on the *action-* and *belief-driven* sensemaking patterns highlighted by Weick (1995), the transcripts were coded again to analyze how the newsworkers made sense of the manner in which emerging technology had influenced their journalistic practices over time.

4. Sensemaking of the Appropriation and Enactment of Emerging Technologies

This section responds to both RQs by presenting findings that are organized according to five sub-sections. Within each sub-section, we first identify examples of how emerging technology was appropriated and enacted in the newsworkers' practices between 2016 and 2018 (e.g., their actions) in relation to a specific dimension of journalism convergence (RQ1). Then, we present how the newsworkers in each news organization made sense of the emerging technology over time with regard to newsworkers' *action-driven* (committing and manipulating) and/or *belief-driven* (expecting and arguing) sensemaking patterns (RQ2). When making reference to these patterns, we italicize and include them in parenthesis in the following paragraphs.

4.1. Business Convergence and New Digital Strategies

In 2018, SPH set up a new digital strategy department devoted to exploring the use of emerging technologies in journalism for its publications, including ST. The head of the department (formerly ST's digital editor in 2016) said that since 2016, SPH's management had been considering an integrated, "company-wide" strategy to incorporate the use of emerging technologies across the company's publications. He said in 2016 that the knowledge learnt from the use of emerging technologies was mostly kept within ST. In 2018, however, he stressed the knowledge had been shared across the company's newspapers. For TOC, the editor-in-chief said in 2016 that ex-

perimenting with emerging technology was not a priority as they were understaffed and he expressed TOC was overwhelmed by day-to-day operations. In 2018, he said previous staffing issues had been resolved and he had more time to explore and adopt suitable emerging technologies over the past year.

On *making sense* of digital strategies, ST's newsworkers were largely *action-driven* by a *commitment* to the idea that new innovative methods were needed to take the company forward in a digital news environment. The head of ST's digital strategy department in 2018 explained that his department had been set up (*manipulating*) because he and SPH's management wanted to focus "on new [digital] trends and developments", "new digital opportunities that [could] be monetized", and develop "more sophisticated ways to engage with [readers] online". In 2016, he said he was "looking for bigger and better collaborations with other departments because of the synergies they brought". In 2018, he thought his new department had successfully helped break down metaphorical walls within the company by promoting a greater degree of knowledge sharing and collaboration. Other ST newsworkers in 2018 also thought the digital strategy department—through its efforts in keeping them abreast of digital trends via weekly email newsletters, and frequent courses and workshops—had created a culture of greater "digital awareness" (deputy political editor, 2018) within the company. Contrary to ST, TOC's newsworkers engaged in *belief-driven* sensemaking that first involved a process of debating (*arguing*) the enabling potential of specific emerging technologies, which led to an alteration of their beliefs and a revised understanding (*expecting*). The TOC editor-in-chief gave two reasons for changing his attitude from ambivalence to embracing the use of emerging technology between 2016 and 2018. First, he said he had become more aware of the advantages of using metrics to understand the demographics and preferences of his readers. In 2018, he said he used digital tools to try to observe the best times to publish stories, monitor the geolocation of TOC's readers, and consider trending topics. He claimed that the data improved his publication's service to its readers, which in turn helped increase readership numbers, and "maximize" online advertising revenue for TOC. Second, in 2018, he also thought automated journalism could help TOC better compete with larger news companies by increasing efficiency and news output, and "free up his journalists to devote more time to producing more in-depth, analytical stories".

4.2. Professional Convergence and Emerging Journalistic Skillsets

Here, we focus specifically on mobile journalism skills as an example of how newsworkers in both organizations appropriated and enacted emerging technology in relation to professional convergence. Other skills involving online metrics, social media engagement, long-form-

video production and interactive graphics are discussed as examples in the other sub-sections.

In 2016, newsworkers from ST and TOC said they were expected to use mobile devices to produce multimedia news and relay information, including videos, sound bites and descriptions of events, to their newsrooms using real-time mobile communication apps (e.g., Telegram, WhatsApp or Facebook messenger). This is in line with being mobile journalists, so-called MoJo's (e.g., Westlund & Quinn, 2018). In 2018, editors from both companies said mobile journalism skills for reporters had become even more important than in 2016. However, both organizations differed in the manner in which mobile journalism was appropriated and enacted since 2016. For ST, its social media editor said in 2018 that mobile journalism skills had "gradually become the norm rather than the exception" and SPH had provided more professional training—mobile journalism hands-on workshops and digital journalism-related seminars—for its newsworkers. For TOC, one of its section editors said in 2016 that instead of "forcing staff and volunteers to be expert mobile journalists", TOC relied on "multi-skilled groups" of reporters, where different journalists excelled in different mediums, to produce multimedia articles. In 2018, the editor-in-chief said that TOC still followed this arrangement as it had worked well.

On *making sense* of mobile journalism skills, both ST and TOC reporters engaged in *action-driven sense-making* patterns, but differed in their approaches. ST's newsworker in 2016 expressed that mobile journalism skills were highly important and they were *committed* to the notion that it was the direction the industry was heading towards because "audiences expected to see more multimedia news content in real-time" (ST videographer, 2016). Hence, SPH had had begun increasing the frequency of digital journalism training since 2016 (*manipulating*). In 2018, the ST deputy political editor said the new digital innovation department's efforts had contributed to making staff more aware of the importance of learning the latest digital journalism tools and production techniques. Second, they also expressed that a retrenchment exercise in late 2017 had psychologically reinforced the workers' *commitment* to adapt to the digital news environment, which required newsworkers to "do more and be more technologically savvy" (ST social media editor, 2018). For TOC, its editor-in-chief acknowledged the importance of mobile journalism skills in both 2016 and 2018. However, in both instances, he said he remained *committed* in his approach in not requiring his staff to be experts in mobile journalism, and instead, adopted a "multi-skilled groups" approach (*manipulating*). In 2018, he gave two reasons his approach: First, he thought it was "unfair to expect a journalist to shoot photos, videos and write a story on his own". Second, he believed TOC's "multi-skilled team" approach had proven to him that it improved communication and collaboration among staff, who were then able to produce better quality, more in-depth stories.

4.3. Technological Convergence and Proprietary versus Non-Proprietary Platforms

We observe two ways in which newsworkers from ST and TOC said they had, over time, altered their use of emerging technology in their strategies for multiplatform news distribution across proprietary and non-proprietary platforms. First, in 2016, both ST's and TOC's editors said they wanted to distribute news content on as many social media platforms as possible. The ST's digital editor said in 2016: "We need to keep flooding the different online platforms with our news [so] that ST remains the prominent brand in the digital space." ST also began pushing content on WhatsApp and Telegram in 2016. Likewise, TOC's editor-in-chief said in 2016 that it needed to "keep pushing content on to every social media space to get traction". In 2018, however, they said they were more selective and cautious when publishing content on social media platforms that were non-proprietary to the publisher (cf. Westlund & Ekström, 2018), although they were still willing to work with the non-proprietary platform companies to increase the reach of their content. Second, both ST's and TOC's editors in 2018 said they were also channeling more resources into enhancing their proprietary platforms, such as mobile news applications and websites, to entice more readers to use these channels, and consequently be less reliant on social media. To this end, they have added features such as customizable content, podcasts, greater interactivity, text-to-voice functions (ST), and multi-lingual versions (TOC). In 2016, editors from both news organizations acknowledged that the motivation to enhance their proprietary platforms had not been as great.

On *making sense* of their multiplatform news strategies, newsworkers in both news organizations engaged in *belief-driven* patterns that involved *arguing* and *expecting*. In 2016, editors from both ST and TOC said that social media channels were helpful for their publications in garnering more readers for their content. However, in 2018, the editors said they had become more skeptical of social media platforms. That skepticism, in turn, motivated them to focus more resources on improving their proprietary channels and reduce reliance on social media platforms in disseminating news:

> Facebook changed its algorithm [in early 2018] and we were badly affected. So, we had to look for alternative sources quickly. But also, we want to grow our readers outside these [social media] platforms. I think we're realizing that as long as we have a critical number of paying subscribers, and we focus on making these loyal subscribers happy by offering them really good products, then it might be a sustainable option…instead of a focus on growing readership numbers. (ST social media editor, 2018)

For TOC, the editor-in-chief in 2018 said he decided to "develop [TOC's] own news app and improve [its] web-

site", to avoid being subjected to the social media platforms' "constant changes and harsh policies". He added: "We would still need social media, but with our own channels, we call the shots, we have access to audience data, and we can better cater to the preferences of our loyal readership base".

4.4. Content Convergence and Multimedia News Production Capabilities

Mobile journalism aside, the workers from both news publications said in 2018 that they had been making use of emerging technologies to improve their capabilities in multimedia news production since 2016. For ST, their editors in 2016 said their publication had set up a video unit to produce documentary-style videos and an interactive graphics unit to produce interactive multimedia news for ST's microsites during major news events. In 2018, the editors said the newspapers' content management systems were gradually being upgraded to better facilitate the processing of multimedia content. For TOC, the editor-in-chief in 2016 said it had invested in developing a microsite to host multimedia news content for major news events, and also new production hardware and software. In 2018, he said besides long-form videos, TOC produced different types of videos to cater to different segments of its audience, including documentary-style videos, three- to five-minute videos clips, and 'live' streaming videos on Facebook.

On *making sense* of using emerging technology to enhance their multimedia news content, newsworkers from both news organizations engaged in *action-driven* patterns. For ST, its digital editor said in 2016 that the publication had *committed* to investing in producing interactive and multimedia content in order to provide audiences with a better "news consumption experience" than its competitors. In 2018, he said ST would continue to upgrade its multimedia and interactive news capabilities (*manipulating*) because he thought they were still crucial in providing "readers with a consistently good experience" that cannot be "easily copied by [ST's competitors]". For TOC, its editors in 2016 displayed a *commitment* towards increasing and improving their multimedia content because they had thought their readers demanded it. In 2018, TOC's editor-in-chief remained *committed* towards that notion and further expressed that he realized readers not only preferred multimedia content, but different age groups preferred different types of videos. Hence, his publication devoted more resources to producing different types of video news (*manipulating*) because he wanted to cater to each age group's preference.

4.5. Audience-centric Engagement, Online Metrics, Social Media, and News Automation

This sub-section presents findings for the fifth dimension of convergence, audience-centric engagement, in re-

lation to how the newsworkers said they had appropriated and enacted three types of emerging technologies—online metrics, social media, and news automation. Our findings reveal a salient correspondence to six of the eight dimensions of measurable journalism proposed by Carlson (2018): 1) material, 2) organizational, 3) practice, 4) professional 5) economic, and 6) consumption. Next follows a closer discussion of these.

Regarding the *material* and *organizational dimensions*, ST's head of digital strategy in 2016 said his publication had been using metrics software, Chartbeat, to track story performance. In 2018, on top of creating a new department dedicated to exploring new ways of using digital tools, including metrics, ST's social media editor said his publication had moved from Chartbeat to a new vendor, AT Internet, and was still considering new software providers that afforded greater data granularity and customizability in tracking story performance. For TOC, although the editor-in-chief in 2016 said he did not rely on metrics, he revealed in 2018 that he had started to use Google Analytics to monitor story performance. He added that although TOC did not create a new position in the company for this purpose, he took on the responsibility of exploring new ways to leverage metrics. Regarding *practice*, ST's editors in 2016 said they had been developing new audience engagement methods on social media. They expressed in 2016 that as part of ST's audience engagement strategy, its newsworkers were tasked with regularly interacting with readers on its social media channels. The editors said it was not seen as successful as the newsworkers felt overburdened. In 2018, the social media editor said ST started closed Facebook groups for its loyal readers, where ST's stories were shared and discussed. Similarly, in 2018, TOC's editor-in-chief said he was planning a similar Facebook group for TOC's readers. However, unlike ST, he said TOC's newsworkers still regularly interacted with their readers on their social media accounts. Regarding the *professional* dimension, in 2016 and 2018, newsworkers from both publications said that the use of analytics to guide news decisions was debated in their news organizations, but stressed they did not entirely rely on metrics to determine newsworthiness. ST's digital editor said his publication had a principle of using "half analytics and half human judgement", while the TOC editor-in-chief said analytics was "a good to have to help better understand your audience, but it was not a must-have". Regarding the *economic* dimension, the editors from both newsrooms said in 2016 that they had worked closely with social media platforms to develop content (e.g., Facebook Instant Articles), but were not given sufficient data on the outcome of those projects. In 2018, however, editors from both news organizations decided to enhance their proprietary platforms to improve audience metrics and reduce their dependence on social media platforms. This data were, in turn, used to drive monetization from online advertising. Beyond digital advertising revenue, ST also experimented with different digital subscription models to maximize monetiza-

tion. It had experimented with both freemium and metered paywall models since 2010, before eventually reverting, in 2018, to a modified version of the freemium model first implemented in 2010. TOC's content, on the other hand, is free. Regarding *consumption*, newsworkers from both publications in 2018 said they were exploring the use of automation in their news production and distribution, whereas in 2016, there was no indication from either that they would be using such emerging technology. In 2018, ST's editors said they would start to explore the use of content recommendation algorithms to disseminate customized news, and were considering the use of an automated system to replicate the digital news copy into daily print editions. TOC's editor-in-chief said, finances permitting, they were going to explore the use of automated news bots to write and publish articles.

On *making sense* of their approach towards using metrics, newsworkers in both organizations in 2016 and 2018 engaged in *action-driven* patterns. Throughout the period of study, they remained *committed* to the idea that analytics should not be prioritized over human judgement, and this reaffirmed their actions to rely more on their news-training when making editorial decisions. For ST, its deputy political editor echoed in 2018 what the digital editor had said in 2016, namely that it took years of journalism training to understand news values and hone editorial instincts, and these could not be replaced by software. In 2016, the TOC editors said they did not "chase numbers", and in 2018, the editor-in-chief said it had not changed. In 2016 as in 2018, TOC would not use it to track the performance of each article (and individual newsworkers), but to get a sense of news habits and preferences, trending topics, etc.

On *making sense* of their approach towards monetizing audience metrics data, ST displayed *action-driven* patterns, while TOC displayed *belief-driven* patterns. In 2016, ST's digital editor expressed that audience data were a crucial stream of online advertising revenue. In 2018, as the head of the digital strategy department, he was *committed* to his earlier attitude towards audience metrics: "We now need to better leverage on metrics and look for new digital opportunities that we can monetize". For TOC, its editor-in-chief was indifferent to audience metrics in 2016. However, through *arguing* and *expecting*, he had adopted a different view in 2018 as he had realized it played a critical role in determining the company's advertising revenue and ensuring TOC remained financially viable.

On *making sense* of their approach towards news automation, the workers in both news organizations in 2018 showed *action-driven* patterns and were *committed* to using these emerging technologies to improve their journalism. Compared to 2016, when neither newsroom was experimenting with automation, ST's head of digital strategy in 2018 said: "We can now customize content to form more personal relationships with our readers". Likewise, TOC's editor-in-chief believed that automation could raise TOC's journalism standards by

breaking news faster and allowing its staff more time to focus on in-depth stories.

5. Three Key Conclusions

This longitudinal and interview-based study of sensemaking around emerging technology has yielded many important findings and three overarching conclusions: 1) the growing importance of *audience-centric engagement*, 2) an emergence of a *collaboration culture*, and 3) the salience of *platform counterbalancing*.

First, this longitudinal study leads us to conclude that *audience-centric engagement* has become increasingly important, and plays into how emerging technology has been approached. This observation emerged in the 2016 data, and as mentioned, led us to incorporate Carlson's (2018) "measurable journalism" framework in our 2018 data collection to further guide our comparison and analysis. All in all, the findings indicate interrelationships between *audience-centric-engagement*-related practices, which has been conceptualized using 'measurable journalism', and the four types of convergent news practices in the following ways: i) *material* and *organizational*, and *business convergence*—both organizations incorporated metrics into their news platforms, and created new roles (ST) and responsibilities (TOC) dedicated to leveraging on metrics; ii) *practice* and *professional convergence*—both organizations were developing new methods of interacting with audiences on social media platforms (e.g., closed Facebook groups which gave loyal readers a sense of exclusivity); iii) *professional* and *professional convergence*—both organizations were increasingly using metrics to monitor story performance (e.g., they demanded more customizable and granular data), but yet displayed concerns about the extent to which metrics should guide newsworthiness; iv) *consumption*, and *technological* and *content convergence*—both organizations were reliant on metrics to inform their decisions on customizing different forms of multimedia content for varied groups of audiences across their news dissemination platforms; v) *economic* and *business convergence*—both organizations used metric data to drive monetization from online advertising and, for ST, design different digital subscription models. Although both news organizations initially (in 2016) displayed different attitudes and strategies for adopting emerging technology, they eventually (in 2018) developed an approach in which emerging technology enabled their understanding and engagement of their audiences, and thus validated its use. Importantly though, they were unwilling to rely entirely on metrics and relinquish their professional influence and editorial judgement. Also, other research from Singapore has indicated a resistance towards the use of metrics (Duffy, Tandoc, & Ling, 2018). More generally, research has found concerns about metrics getting (too much) influence over editorial judgments (e.g., Zamith, 2018). Renewed audience orientation, in the traditional sense of *recipients* that engage with the news, has become crucially impor-

tant for news media that see how user payments become an increasingly large chunk of their revenues, even the largest chunk. Consequently, approaching audiences as *commodities*, sold to advertisers, may on the other hand, lose significance as platform companies continue to overtake the advertising market and as news publishers focus more on reader revenues. This would mark a paradigmatic shift for many news publishers, one in which recipients also must be seen as customers.

Second, a *collaboration culture* has emerged. The adoption and use of emerging technology in both news organizations over two and a half years has gradually resulted in both news organizations breaking down the "walls" that used to separate editorial and business operations, now instead facilitating cross-departmental collaborations. ST's newsroom integration and TOC's "multi-skilled team" approach to multimedia content production are instances of how the use of emerging technology contributed to working practices that fostered greater collaboration and communication between diverse newsworkers. Moreover, as digital innovation (e.g. Carlson & Usher, 2016; Westlund & Lewis, 2014) and audience data (e.g. Carlson, 2018, Nelson & Tandoc, 2018; Zamith, 2018) become increasingly important to the economic considerations of both news organizations, their senior editors are increasingly taking on duties—e.g., monitoring audience metrics and scouting monetization opportunities—that once belonged strictly to the commercial departments. This finding is in line with a growing body of studies on integration not only between editorial and commercial operations (Cornia, Sehl, & Nielsen, 2018; Drew & Thomas, 2018), but also technologists (Lewis & Westlund, 2015; Westlund, 2011; Westlund & Krumsvik, 2014).

Third, *platform counterbalancing* sets the focus to how both news organizations have developed a sort of "balanced" position toward the appropriation and enactment of certain emerging technology. In 2016, they were clearly oriented towards boosting their multi-platform news dissemination, pushing their brands across social media platforms. In 2018, *platform counterbalancing* became salient; they started acting more cautiously with regard to giving away their content to non-proprietary social media platforms, while working on improving their proprietary platforms. This approach appears sensible when taking into consideration that Bell, Owen, Brown, Hauka and Rashidian (2017), in a report about the "platform press", argues that platform companies have gained incredible influence over revenues and citizens' attention spans to the news. News media have oftentimes felt pressured to develop a presence on social media platforms to offer their news where the publics are (Nielsen & Ganter, 2018). Platformization, and the social media bandwagon, has fueled ongoing and disruptive processes in which the news media become increasingly dependent on platforms non-proprietary to them. In discussing this, Ekström and Westlund (in press) posit there is an overall process called "dislocation of news jour-

nalism" in play, encompassing epistemological consequences for truth claims, "contexts of justification" and audiences acceptance/rejection of knowledge claims. Their concept of dislocation of news journalism mostly stresses news publishers becoming more dependent on platform companies, albeit acknowledging the process can also move in the direction of reducing dependence. In assessing the major trends in journalism for Nieman Journalism Lab, editors have in December 2018 similarly singled out news media's overreliance on social media platforms, and predict that more publishers will re-focus their efforts in improving their proprietary platforms and products in 2019 (Schwartz, 2018; Smith, 2018). And even as we make our ultimate edits to this article before typesetting, we are encouraged to see supportive findings and arguments in the Reuters Institute Journalism, Media and Technology Trends and Predictions 2019 report (Newman, 2019). It underscores the frustrations that many subscription-based news publishers continue to endure with non-proprietary platforms, as the former increasingly pivot towards innovating their content and payment models—all this while realizing that social media platforms may perform better as marketing tools than reader engagement channels. In concluding on *platform counterbalancing*, we suggest this may well be used as a concept referring to how contemporary news publishers strategically attempt to balance or reduce their dependency on platform companies. In extension of this, the news media are now increasingly shifting focus from driving traffic, digital advertising and social media engagement, to conversion of readers into loyal subscribers. Yet, they are embarking on a difficult journey as people's willingness to pay is presumably even more limited than their attention spans. We welcome future research into the multitude of ways *platform counterbalancing* is done, and with what effects.

Conflict of Interests

The authors declare no conflict of interests.

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Article

Invisible Locative Media: Key Considerations at the Nexus of Place and Digital Journalism

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Abstract

Mobility and location-awareness are pervasive and foundational elements of contemporary communication systems, and a descriptive term to synthesize them, "locative media", has gained widespread use throughout mobile media and communication research. That label of "locative media", though, usually gets defined ad hoc and used in many different ways to express a variety of related ideas. Locative features of digital media increasingly have changed from visible location-driven aspects of user interfaces, such as check-in features and location badges, toward more inconspicuous ways of relating to location through automated backend processes. In turn, locative features—whether in journalism or other formats and content types—are now increasingly algorithmic and hidden "under the hood", so to speak. Part of the problem with existing classifications or typologies in this field is that they do not take into account this practical shift and the rapid development of locative media in many new directions, intertwining ubiquitous digital integration with heterogeneous content distinctions and divergences. Existing definitions and typologies tend to be based on dated practices of use and initial versions of applications that have changed significantly since inception. To illustrate, this article identifies three emerging areas within digital journalism and mobile media practice that call for further research into the locative dimensions of journalism: *the situational turn in news consumption research*, *platform-specific vis-a-vis platform-agnostic mobile news production*, and *personalised news*.

Issue

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1. Introduction

Mobile devices have become an integral part of everyday life for most citizens in the world (e.g., Newman, Fletcher, Kalogeropoulos, Levy, & Nielsen, 2018). Oftentimes mobile devices are introduced to people in their youth, and they quickly establish frequent patterns of use, and de-

velop so-called mobile media lives (Westlund & Bjur, 2013; cf. Deuze, 2012). People use their mobile devices, portable and ubiquitous by nature, for media consumption and media production in all sorts of places and contexts. Consequently, media organisations (and the journalists that work for them) are embracing emerging mobile technologies—including the place-oriented locative

aspects of them—in a myriad of quickly evolving ways. For example, the production of news today is closely linked to journalists using smartphones to reach sources during newsgathering and to create new multimedia work on the move. Mobile journalists (MoJos), as an extreme illustration of this technological shift, rely entirely on their mobile devices for the production and publishing of news, local to international in scope. Distribution of news for mobile devices moreover has become a point of emphasis in the industry and has become entangled with editorial content management systems, including through the development of key mobile-oriented assessment metrics (Westlund & Quinn, 2018). Moreover, an overwhelming majority of all of the news accessed, shared and commented (e.g., Costera Meijer & Kormelink, 2015) on social media platforms, and social media use in general, takes place with mobile devices in numerous places.

In recent years a handful prolific journalism studies scholars have offered broad and important approaches to the nexus of place and journalism (see, e.g., Gutsche & Hess, 2019; Peters, 2012; Schmitz Weiss, 2014; Usher, in press). All of these advance our understanding of the multidimensional concept of "place". This is our ambition also with this article, albeit in a narrower way, focusing on location-based information in digital journalism. This marks an area that has been explored, tested, and integrated during the past decade, creating exciting new affordances in the pursuit of public engagement. Locative media is one of the ways such location-based features can be conceptualized. Goggin, Martin and Dwyer (2015, p. 43) identify locative media as involving modern mobile media's "capacity to gather and represent information about the location of a device and its users", something that enables, for example, the visualisation of the user's actions or the tailoring of news to a present position. Studies of locative media and locative journalism have for several years addressed various related aspects, such as digital design (Ladly, 2008; Messeter, 2009; Nyre, Bjørnestad, Tessem, & Øie, 2012), content production (Fagerjord, 2011, 2017; Løvlie, 2011; Øie, 2013; Oppegaard & Grigar, 2014) and use (Farrelly, 2017; Humphreys, 2007; Saker & Evans, 2016; Saker & Frith, 2018) of locative media. Yet these studies only take narrow glances at the fundamental changes in digital journalism related to locative media.

While a growing body of research has been focusing more precisely on locative media and locative journalism, as noted above, it has not been fully incorporated, as we argue it should, in the more general body of research into diverse aspects at the core of digital journalism, from use-case scenarios to user-centered filtering mechanisms. We support the sentiment of Westlund and Quinn (2018), who write:

Our overall suggestion for the future research agenda is to treat mobile as a key element of digital journalism. Scholars must start taking mobile media seriously. The future of digital journalism is mobile, and thus dig-

ital journalism scholarship would benefit from analyzing this ongoing shift.

In neighbouring efforts, much research into digital journalism has been successful in distinguishing "online" from legacy media, while typically failing to investigate the role of mobile devices for production and consumption of news (cf. review in Westlund & Quinn, 2018). Similarly, there is a large body of research into the intersection of digital journalism and social media, and this research often has been built on problematic assumptions (see critical review in Lewis & Molyneux, 2018), to which we can add that it also largely overlooks how the study of patterns and attitudes, etc., on Twitter, Facebook, or Instagram are inexorably connected to the material use of mobile devices (and much less so to desktop and laptop computers). While taking the ubiquitous nature of social media for granted, researchers typically fail to see the importance of contemporary mobile devices in facilitating and shaping various forms of communication, entertainment, and information, including participatory and citizen journalism (Westlund & Ekström, 2018). There are indeed empirical studies into the sensemaking of mobile media in news media organizations—i.e., what they think and do with mobile technology and devices—from both its formative years (Westlund, 2011, 2012) and the present (Chua & Westlund, 2019, in this issue). Such research offers a glimpse into the changing nature of how news media approach emerging technologies, such as locative media enabled by mobile devices.

Ultimately, mobile technologies of all sorts—as the interface through which many people experience the world (Farman, 2012)—must be brought more to the forefront via research into the intersection of digital journalism, social media, and other emerging technologies, to truly understand what's happening and also to address in this context more fully what is "hidden under the hood" with regards to how data gathering and analysis happen behind the scenes in relation to positioning and various end-user services and revenue streams.

To illuminate this construct, this article argues that location features in digital journalism are increasingly hard to identify and therefore represent a research design challenge for contemporary and future scholarly inquiry. That does not mean location and locative features are less important, unimportant, or should now be disregarded. These features just are becoming more subtly incorporated and more critical to the ubiquitous veiling of mobile-app influence, increasing the value of studying them but making such study more difficult. Without a more precise definition of locative media, this line of inquiry gets even messier. This complication is particularly complex in journalism, since location and place already provide well-established values to news and constitute core elements of journalistic production, distribution, and consumption.

Along these lines, this article will review current work within mobile media and locative media before

discussing previous attempts of developing typologies and classifications of locative media. Its objective is to survey the field and create foundations for further systematic approaches to analyzing the content of mainstream legacy media in terms of locativeness. In addition, as examples of impact, this article identifies three key areas within digital journalism that call for a further exploration of locative dimensions: 1) *the situational turn in news consumption research*, 2) *platform-specific vis-a-vis platform-agnostic mobile news production*, and 3) *personalised news*. For the first concept, *the situational turn in news consumption* research refers to how researchers from across nearby subfields—from journalism studies to mobile media and communication studies—have devoted increasing attention to situational conditions (spaces and places) in relation to news consumption. Second, with *platform-specific vis-a-vis platform-agnostic mobile news production*, we refer to journalistic content created uniquely by and for mobile devices, as different from various related forms of repurposing of similar content from other mediums. Third, *personalised news* points to the tailoring of news exposure for individuals, based on explicit choices or on preferences set through generally covert uses of algorithms.

2. Locative Media Has Been a Moving Target for Researchers

Frith and Saker (2017) find that while the popularity of early and explicitly locative applications might have faded, the importance and integration of place and position-triggered content through locative media has not. It has rather been domesticated across various other types of mobile media, including social media, and also diffused across numerous scholarly disciplines, engaged by many but owned by no one. Location-technology use, in turn, has become more difficult to identify and measure as it melds into common features across platforms and search engines. So instead of space and place being simplified, reduced, and delineated by modern digital forms, they are made more complex and veiled in practice (Couldry & McCarthy, 2004, p. 7). As Schudson (1978) states, technology is a commonly used explanation for developments in journalism. However, this is more of an abstract theoretical reflection than a working theory, making it difficult to operationalize and investigate (pp. 31–35).

Geographical proximity or "place" is and has been a fundamental news value of journalism for centuries, as the foundational "where" element of local, regional, and national news. A recent book-length focus on this value is found in Gutsche and Hess (2019, p. 3), who explore the intersection between journalism and geography, addressing issues such as how journalism affects perceptions of location, the connections to digital and physical spaces where it is being practiced, and how all of this relates to the power and legitimacy of journalism. Also focusing on place, Usher (in press) offers a

three-part framework relating to digital news maps in which journalists can be 1) *map-makers*, 2) *map-users*, and 3) *map-subjects*. All three relate to the journalists' authority in publishing representations of places. About a decade ago, coinciding with the release of the Apple iPhone, location technologies were approached by newsrooms as opportunities that could be appropriated and made salient via mobile news services (Westlund, 2011, 2012), and thus journalism experiments involving location were highly visible, easy to identify, and relatively prevalent. News media has so far dabbled in this fascination with new digital technologies and new ways of making and using news, related to place, though, without significantly altering business models in pursuit of those opportunities (Øie, 2015). Location functionalities have simultaneously developed from visible location-driven user interfaces—such as check-in features and location badges—towards more "invisible" or inconspicuous ways of relating to location. Reese (2016) argues that recent scholarship on spatial aspects has shown how concepts such as networks, spheres, and fields have become even more relevant when one needs to think of digital news production less in terms of formal legacy news media organizations and more in terms of the many assemblages across diverse spaces that may be involved.

Locative features are now increasingly incorporated in algorithms in various ways and increasingly "hidden under the hood". Evans and Saker (2017) argue in a similar vein that while the use of Foursquare has declined, the key features of this application are now found in all major social networks. They (2017, p. 69) use the term "zombie media" to describe, for example, Foursquare "haunting" media development and shaping new technologies. One of these major recent developments in the collection and creation of location data is that it ordinarily now happens across multiple services and through large map platforms such as Google Maps, Mapbox, and Carto. Together with the so-called ambient location data gathered from your phone's Global Positioning System (GPS), Wi-Fi, Bluetooth, General Mobile Radio Service (GMRS) signals, Near-Field Communication (NFC), and any nearby proximity beacons, this expanding network infrastructure has gradually improved location accuracy and usefulness, which allows apps to register where you are, where you have been, and how long you have been there, even if you don't use the check-in button. The app provider can then identify meaningful locations and incorporate this context into your personal profile and into other built-in app features, such as recommendations, various nearby notifications, ads, matching services, etc. These under-researched developments need to be approached from the perspectives of media strategies, newsroom practices, and journalistic content, as will be described further.

As Schudson (1978) argued decades ago, and Lewis and Westlund (2016) picked up again a few years ago, emerging technologies have led to changes in many as-

pects of journalistic practice, but they do not delve into the specifics of distinctively mobile content. The role of place in locative journalism is aligned with Schudson's (1978) technology argument but not fully absorbed. Place, like technology, is a fundamental part of journalism. However, it may be difficult to identify the "place" component in any particular journalistic artifact in order to conduct rich analyses of those (not that we suggest place should be entirely separated from other contextual aspects). Buchanan (2009) argued that place has been such a fundamental part of journalism, and at the same time so multi-layered and ubiquitous, that focusing on the news relationship to place and space has been too complicated in a traditional story- and content-dominated practice. With the deep-data capabilities of mobile technologies, and the tracking and precision those afford, locative journalism could create a revival of scholarly interest in place, especially as associated with technological impacts on journalism. But, first, we have to figure out exactly what we are dealing with here.

Scholars have to date approached categorizations or typologies of locative media in many ways, in an effort to create common ground in a new field of research. We found in the literature a wide range of concepts describing locativity (and locative apps) and classifying them as such. Some of these approaches have focused upon user activity (Nitins & Collis, 2013), application affordances (Oppegaard, 2015), activities enabled by mobile interfaces (Farman, 2012, 2014), and the applications' primary focus as it pertains to geolocative functions (Farrelly, 2017), as proposed bases for such types of classification.

So far, though, such approaches only have skimmed the surface of investigating how levels of context-sensitivity or locativeness are experienced, particularly in the context of journalism studies. What we have found, is a tendency for existing definitions and typologies to be based on older practices of use, and earlier versions of applications that have by now changed significantly. These applications also will continue to develop rapidly, along with machine learning, Artificial Intelligence, position prediction, the increase in personalized news, etc. As a primary model for what routinely happens in this realm, one of the most heavily studied apps in locative scholarly literature has been Foursquare (Frith, 2013; Hjorth & Richardson, 2016; Lindqvist et al., 2011; Saker & Frith, 2018). Aiming for a moving target, scholars have been chasing Foursquare's iterations as they have undergone significant changes in design, technical frameworks, and even in basic content characteristics for years. Foursquare abandoned prominent location features—such as location sharing, check-ins, etc., in 2014, with the launch of Foursquare 8.0—but still has retained a sense of locativeness through other means and through robust backend systems. So how do scholars aim at this kind of dynamic and rapidly morphing target without missing wildly?

3. Mobile Media and Communication Research

One of the first challenges to overcome is to be clear about how the terms mobile media, mobile technology, and locative media are defined in previous research. As the term "cell phone" may be rendered obsolete by related rapid technological development, Campbell (2013) argued that mobile communication technology could best be defined as "devices and services that support mediated social connectivity while the user is in physical motion" (Campbell, 2013, p. 9). Mobile communication technology is not necessarily used on the move, he wrote, but it can "afford, i.e., make possible, mobility during mediated communication", Campbell (2013, p. 10) calls this "the affordance of mobility". Likewise, Westlund (2010, p. 92) argued that the term "mobile device" is more suitable than mobile "phone", as the mobile technology has developed into an apparatus that integrates multimedia functions and many different technologies, including software, hardware, semiotic systems, etc., into a powerful and highly portable computing device.

Oppegaard (2015, p. 210) leans on Campbell (2013) when describing that mobile devices do not need to be used while on the move but that the *possibility* for "mobility during mediated communication" is perhaps the central affordance at play. He also points to Turkle (2008) in describing one of the fundamental properties of mobile technology as its being part of a social identity, personal, and "always on, always on you" (Turkle, 2008, p. 121), which allows users to think of their mobile device as "an extension of the self," personalizing and customizing it (Campbell, 2008, 2013, p. 11).

Wilken (2012, p. 243) defines locative media as "media of communication that are functionally bound to a location". Wilken and Goggin (2015, p. 2) acknowledge that while location-based media can be said to involve the use of information about a location, the locative aspect is somewhat difficult to define, and argue that locative media have gone well beyond mobile social software, social networking applications, and so-called check-in applications. Importantly, with Facebook successfully incorporating such functionality into their platform, locative actions have been embedded into everyday life in the most-used social media platform in the world. Moreover, Oppegaard (2015, p. 202) argues that mobility and location awareness have become common, underlying characteristics of contemporary, wireless communication systems. For Sutko and de Souza e Silva (2011), mobile interfaces now function as "technological filters" that help "users manage interactions with city space (Saker & Frith, 2018).

Frith (2015) discusses de Souza e Silva's (2006) concept of "hybrid space," and the ways in which these hybrid spaces are formed, through a combination of three elements: social interaction, digital information, and physical space. He further argues that digital information plays a role in shaping how people "read physical places", as digital location information is "providing new ways of seeing, experiencing, and understanding the

city" (Frith, 2015, p. 8). In short, something different begins happening to "individuals and societies when virtually everything is located or locatable" (Gordon & de Souza e Silva, 2011, p. 2). At the beginning of this transition, researchers generally focused on investigating ways in which mobile devices disconnected users from their surrounding spaces, with distracted users documented as unaware of events happening within close proximity (de Souza e Silva & Sutko, 2008). But the quick establishment and domestication of mobile technologies in the past decade has changed this dynamic dramatically, leading scholars back into spatiality and social connections based on proximity (Campbell, in press). Studying Mobile Virtual Reality (MVR), Saker & Frith (2018, p. 12) argue that this technology may promise a move away from "hybrid spaces" toward a "third stage" of mobile media research that they identify as "dislocated space", again stressing the argument that research in a rapidly changing field, such as Mobile Communication Studies, involves working with, establishing, and developing the analytical vocabulary.

The effects of proximity—to put it simply, that things are more closely related the nearer they are together physically—are so profound and fundamental that they have been described as Tobler's (1970) First Law of Geography. With the development of mobile technologies, that line of thought also has been extended into an economic model of public space described as the Second Law of Geography, in which things that know where they are can act on their locational knowledge, allowing spatially enabled things to have increased financial and functional utility (Foresman & Luscombe, 2017). Despite the successes of some commercial locative projects, such as Pokémon GO, journalism does not have a business model for locative journalism yet. Some of the most creative appropriations of hybrid space, by mobile-media artists, for example, could be considered journalistic in nature and could provide inspiration for locative journalism (de Souza e Silva, Duarte, & Damasceno, 2017; Zeffiro, 2012). Some journalism projects also have been created as academic experiments, most without profits and large audiences in mind, creating clear findings of interest in place-based media (Kramp, 2018; Nyre et al., 2012; Øie, 2012, 2013, 2015; Oppegaard & Rabby, 2016). But, despite such potential, journalism organizations primarily have been content with easy and straightforward connections to legacy bread-and-butter products, such as localized traffic and weather reports (Schmitz Weiss, 2013, 2014). The struggle to establish spatial journalism with distinguished content has created a conundrum in the industry, in which digital and mobile media has yet to make many meaningful connections to place (Schmitz Weiss, 2018). We think part of this stunted growth relates to a lack of precision in shared terminology and nascent development of theoretical frameworks.

This sampling demonstrates that the literature on locative media covers a wide variety of conceptual approaches to—and uses of—mobile devices through mobile apps, from mapping services (such as Google Maps) to social applications (such as Instagram) that affords users opportunities to both make and consume locative media (Farman 2014; Frith 2015; Goggin & Wilken, 2015; de Souza e Silva & Sheller, 2015; Sutko & de Souza e Silva, 2011). Among all of these apps with locative features, common ground can be found in the idea that location data plays (and will play) an increasingly important part in the development of different kinds of hybrid spaces, or digital-information environments illuminating place through mobile technologies.

4. Existing Typologies and Classifications of Locative Media

There are several ways to approach typologies of locative media, too. The literature contains a wide range of different concepts describing locativity and attempts to classify it in a comprehensible and operationalized manner. Some of these approaches have user activity (Nitins & Collis, 2013), application affordances (Oppegaard, 2015), interfaces (Farman, 2012), and geolocative functionality (Farrelly, 2017) as a base for their classification. This includes interactivity based on location, maps, user-generated content, technical built-in algorithms such as geo-fences and personal interests and behaviour, and content tailored to suit the user's movement on a micro/meso level.

Drawing upon de Souza e Silva and Delacruz (2006) and Stenton et al. (2007), Oppegaard and Rabby (2016, p. 625) argue that location-embedded media content can trigger mobile devices and "deliver the right experience at the right moment", combining the users' mobility with location-aware interfaces to situate knowledge "in actual and relevant contexts", as a form of (AR) until now mostly explored in location-based games (Goggin et al., 2015, p. 58), everyday urban navigation (Liao & Humphreys, 2015), art and literature projects (Loevlie, 2009, 2011), and museums (Oppegaard & Rabby, 2016, p. 623).

Nitins and Collis (2013) remind us that not only rapid development in technologies have led to diverse academic disciplinary approaches to locative media, which also have led to uncertainty about how we define and analyze it, but the complex situated nature of mobile media complicates our understandings as well. Thus, a taxonometrical uncertainty is prevalent in the field of locative media. This includes scholarly debates on what locative media artifacts are and what they should be. Nitins and Collis (2013) therefore seek a common language to allow locative media scholars and users to better communicate with each other. Based on the use and purpose of the analyzed application, they suggest that locative media can be divided into five main categories: social annotative, commercial annotative, navigational, location-based services, and location-based gaming, although these categories also have many clear overlaps.

Oppegaard (2015, p. 203) argued that the landscape of mobile content has evolved into a "heterogeneous

and fragmented ecosystem", continually stretching definitional boundaries, and with little overarching control by large industry actors. He further claimed that while a lot of early mobile media content could be described as different forms of "shovelware" or "repackaged material dumped on mobile screens" (p. 204), new forms of "mobile-born" and customized content keeps emerging at an increasing rate. Oppegaard (2015, p. 204) also argued that researchers have not been able to keep up with the rapid pace of innovation, and identified one of the knowledge-gaps to be filled as typology, or the ability "to clearly describe mobile app artifacts". The author then aims to close this gap by describing locative apps as a genre (p. 205).

A similarity between the two classification systems suggested in these previous paragraphs is the foundation built on what the apps allow the users to do and how, classifying potential courses of action. Oppegaard defined this as an affordances approach. As such, it could fall under Peters' (2012, p. 699) criticism about too much focus on the potential ways users *could* engage with journalism. One of Oppegaard's (2015, p. 207) claims is that, at the time of writing, the relative novelty of mobile devices, combined with mobile spatial experiences being an emerging field, makes for an ideal time to attempt a classification. What neither Nitin and Collis (2013) or Oppegaard (2015) do, though, is to formulate a more clear-cut typology of mobile media *content*. This leaves us wanting for theoretical and analytical vocabulary when studying legacy media's ventures into locative media and aiming to classify contemporary journalistic practices and, especially, when considering variations in content. We consider improvement of the precision of terms an important part of future boundary work in locative media.

5. Invisible, Omnipresent Locative Features

Next, we turn our focus to three key developments within digital journalism that urgently call for further exploration of locative dimensions, as illustrations of this type of boundary work: 1) *the situational turn in news consumption research*, 2) *platform-specific vis-a-vis platform-agnostic mobile news production*, and 3) *personalised news*. These three areas of interest have emerged as pivotal points to the authors in their ongoing processes of reviewing the research frontier, and following developments in the telecom and media industries. These are not isolated dimensions but rather interconnected developments that contribute to making the field more complex. They are part of a change in which locative features are becoming an increasingly ubiquitous part of digital journalism.

5.1. The Situational Turn in News Consumption Research

The way we organize our daily schedule and activities are affected by developments in mobile-media use. Credit cards, wireless and mobile conversations across continents, and mobile messages (Ling & Pedersen, 2006; Tjora, 2011) are some examples of these changes. These phenomena have inspired a growing body of research on how mobile communication technologies change the ways in which we communicate with each other, and interact with spaces and places (Goggin & Wilken, 2012; Ling, 2004). News consumption with mobile devices was—in its formative years—envisioned to take place "on the go" when other news media were not readily available. A special section on mobile news consumption published in 2015 reviewed and advanced research into the intersection of mobile news and place, alongside patterns, place and participation (Westlund, 2015). As evidenced by several related studies, such as the annual Digital News Reports from the Reuters Institute for the Study of Journalism (RISJ), people are nowadays turning to their mobile devices for news both on the go and whilst at home and at work (Newman et al., 2018).

While news consumption can occur in numerous spaces, there is also research embracing the notion that news *content* is intrinsically related to a certain situation, a given context, and a specific place, and that this is also the case for news *consumption*. As Peters (2012, p. 697) formulates it: "News consumption is not just something we do, it is something we do in a particular place". Studies like these can be described as a *situational turn* in the research on media users.

Specific location-tailored elements in news production, distribution, and content play a significant role in this sort of mobile journalism consumption. Media use takes place in a broader range of situations than generally described in earlier audience studies. Bjur et al. (2014) have examined media use in what they call socio-spatial contexts, finding that how people relate to media content is highly affected by their surroundings. One of their conclusions is that in some cases, the interpretation of media content varies more between different contexts than between different media platforms (Bjur et al., 2014, p. 24). A given media platform, for example, may have a set of situational affordances making it more suitable for some journalistic genres than others (Schrøder & Steeg Larsen, 2010). Locative media, or locative features, has become one way of adapting to the context of the user, as one element of a situational turn in news consumption.

One of Goggin et al.'s (2015) conclusions is that the bulk of development and innovation can be found not in news journalism but in other adjacent communication genres, such as advertising, public relations, and entertainment (Goggin et al., 2015, p. 48). Schmitz Weiss (2013, p. 436) discusses some of the potential uses of mobile media, in line with Peters (2012, p. 699). Her conclusion is that legacy media generally do not offer geolocated or locative content of significance. She is supported by Oppegaard and Rabby (2016), claiming that media companies have chosen not to utilize the many apparent technological affordances available for mobile devices (p. 622), instead mainly grabbing the lowest-

hanging fruit, such as utilizing the potential for more precisely localized traffic and weather reports.

Schröder (2014) has studied how audiences relate to different media platforms in different situations and why. He found that our physical and technical surroundings play a significant role in our repertoire of news in a given context, coining the term "fluctuating audiences" to describe the phenomenon. Findings like these are presumably one of the foundations for Peters' (2015, p. 2) call for research on how audiences relate to (news) media, "as new technologies allow users to blur familiar boundaries and co-create new communicative spaces" as "the ubiquity and personal proximity of recent digitalization increasingly means experiencing multiple places simultaneously and continuously and it is unclear how this impacts our perception and experience of information and the world in general".

Moreover, it is worth noting that some news publishers have adapted their production and publishing of mobile news to contemporary patterns of news consumption by producing videos intended for audiences watching them in silent mode with their smartphones, such as at the Times of India, including logos, subtitles and other visuals (Westlund & Quinn, 2018).

While ad-hoc projects—even at the highest levels of journalism—are promising and encouraging signs for the industry, we argue that a more fundamental mobile-oriented (and significantly place-oriented) paradigm shift really is needed for journalistic content to avoid being subsumed in the noise of all of the other information sources more vigorously and aggressively pursuing the opportunities of mobile affordances. Unlike the ways in which newspapers and radio adjusted to the competition of television journalism, each maintaining a niche, and then all three of those had to adapt together to the Internet, mobile devices can absorb all media forms that have come before it, creating something similar but often better. A smartphone can deliver all of those types of news (text-focused, ear-focused, eye-focused) yet in more dynamic ways and precisely tailored to place, aligned with the physical environment.

5.2. Platform-Specific Vis-a-Vis Platform-Agnostic Mobile News Production

Pavlik (2001, 2004) had early ideas about proposing a research agenda for the study of journalism and technological change, identifying four areas of technological influence on journalism: 1) how journalists work, 2) journalistic content, 3) newsroom structures, and 4) the relationships between news organisations, journalists and publics. In the content realm, Pavlik (in press) argued that technology could make journalism content more immersive and engaging through both technological advancements, such as 360-degree video, and aesthetic strategies, such as through more nonlinear narratives. Research into immersive journalism since has begun to gain a foothold in digital journalism studies (e.g., Baía

Reis & Coelho, 2018). The scholarly discourse surrounding mobile media has clear similarities to that of convergence journalism in the mid-2000s. Some definitions of "convergence" had a built-in, explicit or implicit ideal, where all media organizations aimed for more convergence, utilizing the technological potentials (e.g., Dailey, Demo, & Spillman, 2005; Quinn, 2005). Comparing this to locative media, we argue that while there is a technological development and opportunity here, a simple framing of "news providers have not taken advantage of the potential of locative media" follows a similar vein of assuming that it is rational and reasonable—with current resources, technologies, industry cultures, practitioner skill sets, etc.—to appropriate locative media into widespread journalistic practice at this point. But it might not be the right time yet, either, when considered in more depth and amid the complexities of such a major shift in resources, focus, and revenue sources. There may be various undocumented, misunderstood, or generally underappreciated reasons for media organizations to not devote major resources in this direction at this moment, often lumped together as "not a part of the current business model", or these organisations also may use locative features in ways that are not being detected or appreciated by researchers, hidden both to users "under the hood" and to researchers, "under the radar". While these questions have been discussed thoroughly in relation to convergence, they need to be addressed in future research on locative media and journalism. Ultimately, contemporary news publishers can and also do employ either platform-specific or platform-agnostic approaches to mobile (and other platforms) in their news production (e.g., Westlund & Quinn, 2018). Customization of platform specific content has been a common rhetoric and strategy, and has also been brought along with publishing for non-proprietary platforms and the overall dislocation of journalism that this has resulted in. However, when faced with a multitude of platforms, proprietary and non-proprietary by nature, the news publishers may also find reason to produce platform-agnostic news that can travel to a plethora of platforms, such as native mobile news applications, social media feeds, as well as voice-assisted speakers reading out the news aloud (Ekström & Westlund, in press).

Oppegaard and Rabby (2016) created a prototype of a service-journalism app as a way of exploring the possibilities of place-based journalism. With a focus on user engagement, which they share with Peters (2012, p. 698), as a design principle, the authors argued that the mobile news app—created and tested in the context of a local festival—should engage the user on different levels (Oppegaard & Rabby, 2016, p. 626). The approach was similar to that of Nyre et al. (2012) and Øie (2012), who also created and tested their *LocaNews* reader on real users in the context of a festival. The findings also are similar: Oppegaard and Rabby (2016, p. 631) found that proximity significantly affected user involvement and satisfaction.

A conclusion of *LocaNews* is that:

> Although it may be easy to design a medium that affords location-dependent journalism, it is very difficult to reorient the established journalistic procedures and textual conventions so that they effectively exploit the possibilities of the new medium. (Nyre et al., 2012, p. 312)

If we consider locative media as part of the general technological development of journalism, there are clear parallels to the literature on newsroom convergence, which is considered mainly as technology-driven but at the same time embedded in a particular setting of journalistic cultures and practices (Avilés & Carvajal, 2008; Erdal, 2009, 2011). Several studies of the implementation of technologies in newsrooms have concluded that professional cultures are usually not particularly open to change and innovation but "remarkably resilient and resistant to change" (Ryfe, 2009, p. 198). A similar discussion is found in Jones (2017), exploring use of 360-degree immersive films in journalism in the UK, and a recent cross-cultural comparison of innovation (and social media strategies) in the US and Scandinavia has found there to be a generally slow adaptation of new technologies but also differences between countries and companies (Lehtisaari et al., 2018). Importantly, researchers still have to address in more detailed ways what "slow" and "open" refer to, especially if no benchmarks are being used.

In research review on mobile news, Westlund (2013, p. 19) concluded that legacy news media are not prioritizing unique journalistic content for mobile devices. He said:

> Instead they are increasingly leaning on utilising machines for automated repurposing of journalistic content, while at the same time making use of technological functionalities to provide an experience with the news customised for the (perceived) affordances of the mobile device.

Others have explained this low-level investment as caused by shrinking revenues in the media industry, which have left little capacity to fund research, development, and innovation regarding the potential of mobile media technology (Goggin et al., 2015, p. 55). While this technological shift was initially something that only larger media companies could afford to try, the industry strategy appears aimed at lowering costs as well as integrating more easy-to-use solutions, such as adopting robust third-party systems, rather than participating directly in ambitious research-and-development initiatives, even if their business futures—and the future of sovereign democracies—depend on it. This could mean a reciprocal craving for experimentation with mobile content and thus a potential for a grass-roots increase in this kind of journalism in the immediate future, requiring thought leaders in the industry, though, to push and

support more locative-media projects while also shifting the larger news-organization paradigm to support those exploratory initiatives.

5.3. Personalised News

Mobile sites and applications creating personalised news piqued the interests of many news media organizations and personnel with the rise of touchscreen smartphones around 2007–2008, and precursors to contemporary forms of personalization were inscribed into some of the mobile news services built around that time (e.g., Westlund, 2012). Personalisation of the news is sometimes made explicit by means of communicating to users that they can make news preferences displayed with priority, and sometimes those features are entirely hidden under the hood, simply having algorithms personalising the news exposure for individuals based on their choices within the program (sometimes even producing news for individuals or small groups in a distinct geographical space, such as a street or block). Mobile news applications that currently do not personalize news, rather than those that do, are the exception.

Recent studies of incidental news consumption show that users get news in situations and places that they were not expecting to get news (Boczkowski, Mitchelstein, & Matassi, 2018). This phenomenon is closely linked to the dimension of situational news. In this case, though, social media plays a dominant role, and algorithms, including location data, facilitate how the media would appear for the individual user in order to provide a personalised and place-based touch. Boczkowski et al. (2018) finds that the pervasive use of mobile devices for various everyday communication, their technological affordances, and their temporal-spatial features affect the "anytime and anywhere" of news consumption. One consequence of this shifting power structure is that news organisations lose control when it comes to filtering which information, when, and where to address the users.

One of the forms this filtering may take is (AR). Pavlik and Bridges (2013) discuss AR and claim that this format can be seen as:

> A natural extension of what place-based journalism has historically done best—stories are put in a local context and act as a supplement to a citizen's direct experience with the world. An artifact of this style is evident in the first part of any story in a newspaper—the dateline that identifies the location where a story was reported. (Pavlik & Bridges, 2013, p. 21)

News selection via algorithms also is part of this environment.

In relation to the increasing personalization by social media and news organisations, and the debate on boundaries between algorithmic and editorial selections, Thurman, Moeller, Helberger and Trilling (2018, p. 29) an-

alyzed data from 26 countries and found that audiences overall believe that algorithmic selection of news that is guided by a user's past consumption behaviour is a better way to get news than through traditional editorial curation (when editors decide what you get, in what order, and displayed with what type of prominence). They also found those who access news from a mobile device to:

> Have higher levels of agreement that any sort of news selection is a good thing. However, this effect is stronger for automated personalization based on a user's own behaviour than for editorial selection or automated peer-based personalization. (Thurman et al., 2018)

Although this may not initially be great news for media organizations, Thurman et al. (2018, p. 29) conclude that their findings point toward possibilities for personalization for young people and mobile users in particular. If audiences want something, like personalised news, that legacy media organisations are not giving them, audiences will migrate to meet their needs and desires, leaving behind the less-adaptable. In the case of personalised news, most media organizations have made some commitment to fostering that type of independent curatorial choice. That said, developing algorithmic news preferences for audiences seems only an elementary step in the evolution of mobile news, particularly when considering the vast potential of place-based news and locative media in general. Therefore, personalising news may be a start today but more complex and nuanced associations among people, place, and information are destined for tomorrow, raising an imperative for news organisations to adapt now or risk obsolescence later. These provided examples, in turn, could present the foundations for a systematic approach to analyzing the content of legacy media in terms of locativeness.

6. Conclusion

Locative features of digital media increasingly have changed from visible location-driven user interfaces, such as check-in features and location badges, to more inconspicuous ways of relating to location. Locative features, whether in journalism or other formats and content types, are now more and more incorporated in the algorithms in various ways and increasingly hidden "under the hood". That does not mean they are shrinking in importance or deserve less scholarly attention. As prominent and structurally important examples, three recent developments within digital journalism have been identified that call for a further exploration of the locative dimensions of journalism. These are interconnected developments that are part of a change where locative features are becoming an increasingly ubiquitous and essential part of digital journalism.

As this article has shown through a discussion of existing definitions and attempts to categorize locative media,

it is clearly more manageable to investigate and analyze the *visible* features of a given application, system, or format. Part of the problem with existing classifications or typologies, though, is that they don't take the rapid development of locative media into account, don't proactively embrace emerging mobile technologies and practices, such as the mobile media shared via auto apps or produced by drones, and don't bring to the foreground the otherwise invisible aspects of locative media. There is a clear tendency for existing definitions and typologies to be based on older practices of use, and earlier versions of applications that have by now changed significantly. Previous features that characterised the locativeness of an application may have been redesigned, removed, or have changed user practices and may be found in other features within the application instead.

In extension of this article we make a call for further conceptualization and modelling of locative media in the salient case of digital journalism. While remaining focused on what is otherwise invisible and hidden under the hood, future works could draw upon recent and more general conceptualizations, such as "smartphones as metamedia" by Humphreys, Karnowski and von Pape (2018) in the field of mobile media and communication, as well as previously discussed research into space and place in journalism by scholars such as Gutsche, Hess, Schmitz Weiss and Usher, respectively. In terms of public good, we believe that locativity has much potential in—and therefore needs to be studied in relation to—the content and personal addressability of digital journalism. Important questions for a working model include how content will be produced and tailored, what kind of content is addressed, and also if and how such content is considered locative?

Conflict of Interests

The authors declare no conflict of interests.

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Article

Insularized Connectedness: Mobile Chat Applications and News Production

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Abstract
Focusing on recent political unrest in Hong Kong, this article examines how mobile chat applications (e.g., WhatsApp, WeChat, LINE, Facebook Messenger and others) have permeated journalism. In Hong Kong, mobile chat apps have served as tools for foreign correspondents to follow stories, identify sources, and verify facts; they have also helped reporting teams manage large flows of multimedia information in real-time. To understand the institutional, technological, and cultural factors at play, this article draws on 34 interviews the author conducted with journalists who use mobile chat apps in their reporting. Building on the concept of media logic, the article explores technology-involved social interactions and their impact on media work, while acknowledging the agency of users and audiences within a cultural context. It argues that mobile chat apps have become hosts for a logic of connectedness and insularity in media work, and this has led to new forms of co-production in journalism.

Issue
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1. Introduction

In recent years, reporters have put mobile chat apps to extensive and imaginative use in a variety of reporting contexts across East Asia. Mobile chat apps—such as WhatsApp, Facebook Messenger, Snapchat, WeChat, LINE, and Telegram—are instant messaging applications on mobile electronic devices such as smartphones or tablets. Developed and popularized as social applications, chat apps have also become essential tools for journalists and other professionals.

To understand and conceptualize the emerging role of mobile chat apps in the media ecosystem, this article draws from the academic literature on media logic (e.g., television and social media) as a starting point. It uses the concept of media logic to show how institutional, technological, organizational, and cultural factors co-shape media work on chat apps. Using a case study of chat apps in reporting, this article finds that the media logic of chat apps reflects the ways mobile chat apps cross boundaries of communication technologies and serve as multimedia conversational hubs. While they have developed their own internal sets of norms, mobile chat apps are part of a larger media ecosystem that connects to non-digital (e.g., phone or face-to-face conversations) and digital communication (e.g., social media platforms or other websites, increasingly on mobile devices).

This article identifies a distinct logic of reporting using mobile chat apps, and finds that this development has important implications for news production. The first part of this article will provide an overview of the emerging logic of chat apps by examining the power relations and features of chat apps. The second part will look at the literature on the media logic and situate this study. The third part will examine how journalists have used mobile chat applications in their daily practices. This empirical section will analyze communicative features of chat apps in relation to journalistic practices, drawing on the au-

thor's interviews with journalists who have used mobile chat apps in their work. The article argues that an emerging journalistic culture on chat apps—with connectedness and insularity as major features—is leading to a new communicative logic. More than that, this logic has implications for scholarly efforts to conceptualize social interactions on chat apps and their outcomes in journalism.

2. Mobile Chat Apps in News Production

Mobile chat apps are applications users can exchange information with other users in real time. These exchanges involve text messaging, voice messaging, image or file sharing. Mobile chat apps are distinct from 'traditional' social media; they are mobile-first and offer one-to-one and many-to-many messaging options rather than the social discovery of social networking platforms, such as Twitter or Facebook (Barot, 2015, 2017; Belair-Gagnon, Agur, & Frisch, 2016, 2017a, 2017b).

While usage of mobile chat apps in daily reporting varies across political regimes, languages, and users, East Asia has been a world-leader in terms of development and usage of chat apps. While some chat apps have multiple target audiences and are popular in several countries, other chat apps are language-specific and are popular primarily where that language is dominant (e.g., KakaoTalk in Korea). The usage of chat apps in reporting is also tied to government regulation. WeChat, owned by the Chinese company Tencent Holdings, is widely used in China in large part because other chat apps (such as WhatsApp) are banned (Little, 2014). Yet, when users install a Virtual Private Network (VPN), they can use any chat app. In interviews, reporters also noted that young urbanites in large Asian cities are the most active users on mobile chat apps (Belair-Gagnon et al., 2017b). Especially in East Asia, reporters undertaking the work involved in news production—for example, newsgathering, sourcing, verification, integrating multimedia content, and editing—can use mobile chat apps to connect quickly and, on some apps, securely, with individuals who can provide information relevant to a story.

Much of the importance of mobile chat apps in professional work stems from their popularity in broader social life. Since their introduction from 2011 onwards, a few mobile chat apps—such as WhatsApp, WeChat and Snapchat—have attracted very large user bases, numbering in the hundreds of millions of users (Business Insider Intelligence, 2015). According to the data startup Quettra, of the world's ten most used mobile apps, six are chat apps (Quettra as cited in Schaefer, 2016). And while the average mobile app is used 1.9 times per day, chat apps are used on average nine times per day (Flurry as cited in Seetharaman, 2015). These trends highlight the reasons why reporters turn to these apps as tools for social discovery.

With mobile chat apps, users can create, share, and spread content. The multimedia nature of chat apps means that users can post text, hyperlinks, images, and videos, which can be accessed by anyone with access to the group where the content was posted. These are often short posts intended for targeted audiences, and users often post content on the assumption that it will be ephemeral (Belair-Gagnon et al., 2016). Sharing can take place in several ways: users can post content within a chat app, re-post (and, in the process, modify) other users' content, livestream events as they happen, provide live commentary and multimedia content in the context of a game, or take content from a chat app and re-post it in another chat app, social media, or web board. The spreadability of content is determined in part by decisions in design: the level of openness of the app and the ease of access to the group where the content is posted. In contrast to social networking sites like Twitter, where content is public and searchable, many chat apps default to closed groups that are not searchable from outside and require permission to join (Reid, 2016). Especially given the size of groups that some chat apps foster, the closed nature of many groups means that large and very active conversations can take place out of sight (Agur & Frisch, in press). This may be useful, even critical, for groups using these spaces to circumvent surveillance; they offer a refuge from open, searchable sites (such as Sina Weibo) where reporters and potential sources might be wary of speaking in much detail.

In Hong Kong's distinct media context—free speech protected by the Basic Law coupled with pervasive surveillance of online activity—closed groups allow for frank discussions among many different segments of the population, from activists to reporters to elected officials (Lai, 2015). But the closed nature of many of these apps adds a challenge for reporters trying to monitor key participants in fast-moving stories. When groups are private, not just their contents and members are hidden; without an invitation, journalists would not even know of these private groups' existence.

3. Media Logic in a Cultural Context

In media work, context is an important driver of not just norms and practices, but also of structures and their underlying logics (Altheide & Snow, 1979, 1991). Thus the media logic that prevails in one cultural, social and geographical context might differ—even considerably—from the logic that prevails in another context. And over time, as new communicative tools and possibilities emerge, decisions by key institutions and by masses of users can erode a media logic and a new one to supplant it. In short, media logics are shaped by contexts and vulnerable to disruption. As media continue to evolve, the concept of media logic allows for a productive examination of how reporters navigate an entangled world of old and new forms of communication.

This article focuses on a popular emerging media format (mobile chat apps) in a particular context (Hong Kong, a major media hub and the site of a large protest in recent years), examining chat apps through the per-

spectives of a group well-positioned to identify changes in the media logic (foreign correspondents who have used chat apps in their reporting). Several features of these chat apps make them worthy of such an analysis: with short, clipped conversations and messages sent on the go, and a strong role for local language and culture, mobile chat apps offer a compelling way to rethink the concept of media logic. With their wider range of features and greater sense of immediacy, they offer not merely an extension of what social networking sites already offer, but a new, faster, more mobile, multimedia, and hybrid set of formats for reporters engaged in news production. This exploratory article identifies and theorizes two aspects of chat apps—connectedness and insularity—that make them distinct as communicative spaces, and probes the ways chat apps are part of a larger, structural change taking place in contemporary media work.

3.1. Media Logic: From Mass and Social to a Hybrid Logic

Altheide and Snow (1979, 1991) coined the term mass media logic. By logic, they referred to how media formats (e.g., television or radio) organize and technologically structure content and audience expectations. For example, the format and logic of television shapes the nature of cable television news discourse (Altheide, 1987). As Altheide wrote, "media logic has transformed journalistic culture. For example, the way that journalists conduct interviews has changed, and this in turn has had drastic consequences for political communication" (2004, p. 294). Altheide and Snow (1979, 1991) focused mainly on mass media logic, but subsequent research expanded the study of media format, technology, media practice, and content to the study of digital and social media in journalism (Deuze, 2009; Duffy & Pooley, 2017; van Dijck & Poell, 2013).

Using the concept of mass media logic as a mapping tool, Deuze (2009) identified principal components of work styles in media production industries. Focusing on what people do when they work and how they provide meaning to actions and beliefs, Deuze suggested that a comprehensive understanding of media making consequences needs to take into account the technological contexts (including hardware and software) where meanings develop. In this exercise, Deuze argued that it is important to acknowledge the features of technology, as well as the autonomy and agency of media workers in using those technologies.

According to van Dijck and Poell (2013), the logic of social media (including norms, strategies, mechanisms, and economies) has become entangled with Altheide and Snow's (1979) logic of mass media. Emphasizing programmability, popularity, connectivity, and datafication, van Dijck and Poell (2013) highlighted a shift from institutional to social media logic, with social interactions taking place in a networked ecology. Reflecting those

ideas, Duffy and Pooley (2017) found elements of a social media logic on Academia.edu. They argued that academics replicated self-branding practices while adapting to the technological features (e.g., open access model) of the platform. Like Academia.edu on desktop, mobile chat apps offer a set of technological features that have proven adaptable to media work.

Critics of media logic have suggested that the concept implies a passive audience, adding that there may be public logics or mediatized interactions that the media logic concept did not take into account (Brandts & van Praag, 2017; Couldry & Hepp, 2016). Yet, media logic is a malleable concept that enables researchers to explore the features and capacities of different media, and their impact on media work, while highlighting the agency of users in the study of online social interactions (Berglez, 2011). Dahlgren wrote that "media logic vary according to the medium and the genre, as well as between social sites of media production and consumption" (Dahlgren, 1996, p. 63). Emphasizing both the new informational structures that mobile chat apps offer and the malleable concept of media logic, this article presents audiences not as passive recipients of content, but instead as active participants and creators.

This article's conception of the logic of chat apps relates to the work of Chadwick (2013). In referring to "hybrid media system" in political communication, Chadwick argued that organizations, groups, and individuals who are best able to blend older and newer media logics increasingly defining politics. Chadwick wrote that the interplay between old and new media involves a mixture of conflict and competition but "it also features important pockets of interdependence among these logics" (2013, p. 207). In that sense, media convergence makes it harder for scholars to unpack the logics that overlap and intertwine (Klinger & Svensson, 2015).

Building on this literature and using empirical data from interviews with reporters who have used chat apps in their work, this article explores: the variations among apps and in different economic, political, and social contexts; the platforms' properties; journalistic uses of these apps; and what happens when mobile chat apps cohabit with other platforms (e.g., Facebook or Twitter). This article builds on past work on media logic by applying the concept to media interactions on mobile chat applications, and by treating these interactions as intertwined and overlapping systems that offer a range of networked user experiences. This article thus contributes to scholarly understanding of the growing role of chat apps in media work.

3.2. Mobile Chat Applications in News Production

Looking at the logic of mobile communication, scholars have shown that mobile phone usage has gained increasing traction in media work, leading reporters to be able to report from the field with greater ease, even as they manage ever-larger flows of data and content

(Westlund, 2013; Westlund, Gómez-Barroso, Compañó, & Feijóo, 2011). Journalistic uses of mobile phones vary, for instance, across forms of journalism, location, and beats. Yet mobile phones tend to be more utility-driven and used in short increments, while tablets are more conducive to long reads, in-depth information, and videos. These features associated with mobile phone use suggest that their mobility is an important—even essential—aspect of their logic.

In contrast to social networking platforms such as Twitter, Instagram, and to a lesser extent, Facebook, mobile chat apps are designed to be mobile-first. And crucially for journalists, content on these apps is also less openly searchable. In these emerging contexts, several questions arise: How have reporters used mobile chat apps in hybrid media work? How do journalists understand the features and possibilities of these apps? What power relations have emerged in journalistic usage of mobile chat apps? And what media logic has developed as mobile chat apps have become normalized in news production?

By exploring these questions, this article identifies the reporting norms that have emerged on mobile chat apps within the media and cultural context of Hong Kong. A media logic helps to understand this because it emphasizes the changes that are taking place in how journalists organize and structure content using mobile chat apps, and how these new tools of reporting have become part of hybrid media systems. And following work by other scholars who have applied the concept of media logic to changing journalistic uses of communication technology (Deuze, 2009; Duffy & Pooley, 2017; van Dijck & Poell, 2013), this article focuses not on mass media logic, but instead on a media logic within a particular context: that of journalists experimenting with and integrating new technology into their daily practices.

4. Methodology

To answer the above questions about how journalists understand and navigate mobile chat apps in their reporting practices, I traveled to Hong Kong in 2016 and conducted 34 semi-structured interviews with foreign correspondents using chat apps in their coverage of Hong Kong, mainland China, and Taiwan (for print, digital, and broadcast media organizations). While foreign correspondents represent a thin slice of working journalists in Hong Kong, their practices reveal a great deal about how journalists can use mobile chat apps in news production. At major news organizations, foreign correspondents must typically possess a strong command of the local language (written and spoken) and culture. All the reporters I interviewed could read and understand written Chinese, though to varying degrees of fluency (e.g., foreign reporters based in mainland China sometimes struggled with traditional characters in Hong Kong). While some outside observers might assume that foreign correspondents are native English speakers, my sample includes individuals whose first language is neither English nor Chinese. And some are as comfortable in Chinese as they are in any other language, and that competency—along with their knowledge and reporting skills—helps explain why major news organizations hired them. For foreign correspondents who can read and contextualize content in the local language and pursue newsworthy stories that emerge from these digital interactions, mobile chat apps offer a useful entry point for reporting.

Hong Kong offers several advantages for a study of how foreign correspondents use mobile chat apps. It is a global media hub, with a mixture of large media organizations, start-ups, stringers, and digital fixers. Hong Kong is representative of the region in that mobile chat apps are a ubiquitous social presence; at the same time, given Hong Kong's elevated per capita wealth and level of smartphone ownership, it offers a glimpse of the future of mobile chat apps. Importantly, Hong Kong was the site in 2014 of a major protest movement coordinated in large part by mobile chat apps. Led by a coalition of tech-savvy teenage protesters, the Umbrella Movement showed how protesters could coordinate using WhatsApp and other apps (e.g., Facebook Messenger and, briefly, Firechat), and how journalists could use those same communicative spaces in their efforts to provide coverage of a large, evolving, multi-site social movement (Belair-Gagnon et al., 2017a, 2017b). The Umbrella Movement reinforced the social significance of mobile chat apps in Hong Kong, with WhatsApp as the preferred app across ages and socio-economic groups.

To understand how reporters understand and use mobile chat apps in Hong Kong, I sought first-person perspectives from a range of journalists. The interviewees for this article were diverse in the sense of their place of employment (major wire services, a range of print and digital publications, niche news sites, and start-ups), their role (including reporters working in teams, solo foreign correspondents covering the region, stringers, and ranks ranging from cub reporter to bureau chief), and their places of origin. Their diversity extended to their beliefs about reporting: they disagreed on the relative importance of certain stories, whether to include certain images or leaked quotes, and how critical their news organizations should be about certain sensitive topics. What they had in common was experience using chat apps in news coverage of political unrest in Hong Kong, mainland China, and Taiwan; knowledge of written and spoken Chinese (and thus capacity in using chat apps in local dialects), and a sense of how they and other reporters used chat apps in news production. In exchange for anonymity, the reporters interviewed in this research offered insight into emerging social and professional norms on chat apps, official processes and rules, security challenges (from protecting devices and accounts, to working with sources with uneven understandings of encryption and other security features), and debates among reporters and editors about best practices on chat apps.

The snowball method—beginning with existing contacts, then developing new ones based on referrals from interviewees—was helpful in identifying reporters who were especially adept with mobile chat apps, and who had gained the respect of their peers. Thus over a period of months, new interviewees emerged, followed by recommendations and new contacts. Due to the challenges of time and distance, some interviews took place via telephone or chat apps (Skype, WeChat, WhatsApp, and others), but the bulk of interviews took place in Hong Kong. The interviews in this study lasted an average of 45 minutes and were conducted in English. The questions focused on ways journalists used mobile chat apps in their reporting, the benefits and challenges of using chat apps, the aspects of media work (e.g., newsgathering, sourcing, or verification) in which reporters had found chat apps most (and least) useful, how they thought about chat apps in relation to social media such as Facebook and Twitter, how reporters learned and related to the technical capabilities of chat apps, how they navigated the issues of security and surveillance, and what institutional constraints (e.g. from editors or official policy at news organizations) governed their use in reporting. All interviews were recorded, anonymized, transcribed, and then coded using Dedoose. This allowed for themes to emerge organically from the interview data (Belair-Gagnon, Mishra, & Agur, 2014). As part of the coding process, I used labels such as 'print reporter,' 'newspaper journalist,' 'editor,' and others to describe each interviewee while protecting anonimity.

5. Findings: Connectedness and Insularity in News Production

The following section examines two themes that have emerged from the analysis of the logic of chat apps in media work: connectedness and insularity. While van Dijck and Poell (2013) noted that social media logic had elements of connectedness, the logic of chat apps also includes insularity, because of the private nature of much of their contents. Especially in communicative contexts in East Asia, where mobile chat apps are so deeply woven into social life (and, as a result significant digital communication takes place in cloistered settings), it is important for scholars to explore how connectedness and insularity factor into media work with chat apps.

The concepts of connectedness and insularity shed light on the interdependencies that arise as chat apps become common tools in news production. The emerging logic of chat apps does not simply manipulate content for passive audiences, as suggested in Altheide and Snow's (1991) theory of media logic. Instead, the logic of chat apps is co-shaped by media workers and audiences within a socio-technical system. For this analysis, *connectedness* refers to a broad shift from from densely tied groups to loosely bound groups (networked individualism and networked customization). On chat apps, connectedness has a special significance: networked power

has shifted from media producers to a complex network of users within a socio-technical system. In this sense, the notion of connectedness builds on the approach of van Dijck and Poell (2013). Meanwhile, *insularity* refers to interactions that take place within closed groups and, over time, become isolated in terms of participants and content. Insularity is the result not only of social practices but also of codes, data, algorithms, and interface design. Thanks to their flexibility of group size and the ease with which users can erect walls around group conversations, chat apps are more susceptible to insularity than Twitter or Facebook.

The resulting communicative culture has several features. Algorithms enable designers to locate users with similar interests and introduce them to each other, and this process fosters online communities of interest. Trust among users (and trust in the system that brought them together) also facilitates collaboration, even at a distance. These collaborations can vary not only in scale and duration, but also in the assumptions members have about how public or permanent the communication will (or ought to) be. Because chat apps exist in a murky space—neither fully private nor fully public—and because journalistic norms on chat apps are still being developed, users often have unclear or varying assumptions about the open or closed nature of their communication. The following section unpacks how connectedness and insularity work on mobile chat apps in everyday media work.

5.1. Connectedness in News Production

In the context of mobile chat apps and journalism, connectedness refers to distribution and audience engagement with news. Chat apps allow media organizations ways to connect with younger audiences, such as during the Hong Kong protests of 2014. How well media organizations can connect with online users depends on the degree of searchability on open and closed platforms, and involves what journalists referred to as 'awareness systems.' For example, journalists followed a hashtag (e.g., #editorial) on Slack without needing to dedicate much time on a day to day basis (Belair-Gagnon et al., 2017a). A reporter who covered the 2016 election in Taiwan said: "We basically got a live streaming press conference of their traffic blocking and arrest. It doesn't change our reporting, just adds more data" (Interview, January 2016). The same function is available within WhatsApp groups (e.g., #HKDisappears #FreeHKBookSellers or #FreeLeeBo). And unlike WhatsApp, the cloud-based app Telegram allows users to sync contacts and conversations across different devices, and is available as a desktop service.

On chat apps, users mentioned being more intentional in their search for information, such as with a subscription function connected to a user's search feed. WhatsApp Starred Messages to find it later. A journalist said:

When someone sends an important message on WhatsApp, you can't save it. Finding it later can be a pain, despite the robust search engine in WhatsApp. One of our workarounds was to use hashtags to mark important messages. Later, reporters can look up their bookmarked message list them chronologically. (Interview, January 2016)

On WhatsApp, journalists and audience members marked messages as read or unread. When a link was pasted into a WhatsApp chat, users mentioned also seeing a link preview with an image from the article, the headline, and the base URL—much like what users see on Facebook or Twitter. Users also have the option of not including the preview. With the searchability function, journalists look for sources or sources reaching journalists (Reporter, in-person interview, January 2016).

Journalists also verified information using chat apps' temporal and spatial features, such as time stamping and geolocation (Reporter, in-person interview, January 2016). On LINE, for example, journalists published pieces of content that users can find at a later time. This means they scrolled through the app as they would with their Facebook news feed. Images and video are published with accompanying text, and a map or a chart might also feature alongside an interesting fact, or bullet points explaining the importance of the topic, explained a reporter for a digital-only publication.

As mobile chat apps have become ubiquitous in some parts of the world, many political campaigns and activist groups have developed a presence on chat apps. The result has been connectedness between these groups and reporters, for example, to share multimedia information. In Hong Kong during January 2015, the student group Scholarism held a series of petitions concerning five employees of the Causeway Bay Bookstore who had gone missing. In their communication, the group shared pictures, maps, links to Google Drive, PDF attachments, phone numbers and meet ups using the apps as a rolling press conference.

This connectedness has also led to a new sense of old concepts in sourcing. For example, as print and broadcast reporters have done in the past, one foreign correspondent interviewed in this research reached out to a fixer who understood the context and location of her research. This "digital fixer" introduced the foreign correspondent to the local culture online: a WeChat group of 500 people trading ideas about relevant issues. In an interview, the foreign correspondent mentioned that the information was discoverable only using the chat app. Like many other reporters interviewed for this research, this interviewee highlighted the value of having someone embedded in the community to show that the WeChat group existed, extend an invitation to join the group and bring the reporter "into the circle of trust" (Reid, 2016; Renner, 2016).

5.2. Insularity in News Production

For journalists, an important structural feature of chat apps is that conversations can take place in closed settings. The resulting insularity can have significant implications for how reporters use chat apps as social discovery tools. For example, users can set up custom notifications, which emulate some of the beat reporting practices. On WhatsApp, users can set custom notifications for people or groups. Many chat apps are also now encrypted, which protects conversations and encourages greater levels of trust among participants. But the extra protection offered by encryption can make users more aware of security threats and more inclined to use closed spaces.

Insularity on mobile chat apps is determined by how visible users and their contents are on the network. While some apps are encrypted (e.g., WhatsApp, Signal, Telegram, LINE), others are not (e.g., WeChat), and others have encryption but require users to enable the feature (Facebook Messenger). And while some apps are not encrypted, users can reach a higher level of anonymity by using a VPN. This distinguishes the flow of information on chat apps to other social media platforms like Twitter, where newsgathering can happen in a more open way (note that Twitter's Direct Messaging involves one-to-one interactions). Chat apps reflect a turn towards strategically managed digital networks. For example, a reporter mentioned saying to sources:

"Hey can you download this thing Signal, it's safe, we can chat on that." They don't really want to or they don't really understand. And the people that do understand were never like technologically savvy enough to do that. So everybody just uses WeChat and WeChat [which are] incredibly insecure. So if it is a very a sensitive story I won't use WeChat, but in terms of a story that it would show up in…with a Tibetan director it was great because I got in touch with him on WeChat, met up with him and then all of follow up questions, as I had them I could just send them to him in either voice notes or in a text…then they can sort of respond at their convenience. (Reporter, in-person interview, January 2016)

Similarly, a print reporter emphasized that communication on open, surveilled, platforms could lead to conversations in safer spaces. If a potential source posted something interesting or newsworthy on Baidu, a journalist could send a private message asking to speak via QQ or another app. And the savvier sources know that this method—posting informational tidbits in public and waiting for reporters to reply in private—is often an effective way to spark conversations with journalists. Thus chat apps are tools not just for journalists but also for protest leaders who see news media as part of their larger public outreach strategy.

Reflecting the insularity of chat apps, journalists based in East Asian bureaux mentioned following people

or groups on Twitter, Facebook, and WhatsApp, mainly to get in touch with friends and family, because the app is more personal. And each of those apps reflects a particular context. A reporter said that Twitter was not widely used during the 2014 Hong Kong protests "probably because of Weibo" (Journalist, in-person interview, January 2016). The reporter added:

Even though the students were more active on social media, they were basically talking to their own followers….Did you find that there were people you have known before, either personally or media personalities who were using the internet differently by the end of the movement? Did anyone really change their habits as a result? (Foreign correspondent, in-person interview, January 2016)

In addition to the fragmentation of information, users also connected using QR codes to have information and subsequently communicate with the source (Journalist, in-person interview, January 2016). Similarly, Little (2014) from Storyful wrote: "I ran out of business cards during my visit to China, and ended up using WeChat to connect with every new friend I met, engaging in a surprisingly intimate exercise of scanning our respective QRs". This finding reflects the ways journalists conceptualized the features of these apps using their professional knowledge repertoire (see Larsosa, Lewis, & Holton, 2012; Singer, 2005).

In their work, considering the insular and private nature of mobile chat apps, reporters also added new layers to established journalistic norms (e.g., do not cause harm to sources), reflecting a sense of agency and also a tension in the evolving relationship between audiences and journalists in chat app spaces. For example, a reporter for a major newspaper spoke of an unease when using WeChat with new sources, especially those whose enthusiasm to chat about political issues exceeded their knowledge of the technological risks involved. On the one hand, that reporter (and others) saw WeChat as widely used platform where many people felt comfortable speaking informally to new acquaintances. Thus it had the poten-

tial to yield new details and even entirely new stories for news coverage. So there was a perennial temptation to simply let sources talk, even if doing so put them at risk to authorities in mainland China. But on the other hand, if reporters intervened and suggested moving to an encrypted platform (or to a private setting such as a home), the source might worry that the conversation was escalating too quickly, and end the communication. These ethical considerations are not new in digital journalism, but the complexity and hybridity of mobile chat apps add a new set of challenges for reporting.

Table 1 shows how interviewees perceived the features of the primary chat apps they had used in journalistic sourcing. In connectedness, the ratings (low, medium, and high) note the ease with which journalists found sources on that chat app, used a broad set of features for sharing information and media content, and scaled the conversation from individual to small group to large group. These reflect what interviewees said about their experiences using these chat apps. In terms of insularity, all of the primary chat apps included here allow for closed groups; this was a major reason why sources and journalists were drawn to these apps. Yet there was wide disparity in the degree of privacy offered by these apps, from the encryption-first model of Telegram (with security as the primary design feature) to the encryption-plus model of WhatsApp (a wide range of user features, with encryption a recent addition), to the looser security of Skype (which interviewees avoided for sensitive conversations), to the highly social but also surveilled model of WeChat (which journalists found very useful for starting conversations that later progressed to other, more secure, apps).

Table 1 also provides a starting point for thinking about the questions this paper has sought to answer. Research question no. 1 asked how reporters have understood and used mobile chat apps in hybrid media work. Interviewees discussed several key concepts related to their use of chat apps: *Closed groups* offered digital spaces where reporters could have confidence their their discussions, with sources and with fellow reporters working on the same story, would be safe from surveil-

Table 1. Journalistic sourcing on chat apps.

	WhatsApp	LINE	Snapchat	WeChat	Facebook Messenger	Skype	Telegram	Signal
Connectedness in sourcing	High connectedness, high flexibility, high scalability	High connectedness, high flexibility, high scalability	Medium connectedness, low flexibility, low scalability	High connectedness, medium flexibility, medium scalability	High connectedness, high flexibility, medium scalability	Medium connectedness, low flexibility, low scalability	Low connectedness, low flexibility, medium scalability	Low connectedness, low flexibility, medium scalability
Insularity in sourcing	Encrypted, closed groups	Closed groups	Closed groups	Closed groups, surveilled	Closed groups	Closed groups	Encrypted, closed groups	Encrypted, closed groups

lance. These were useful when approaching tech-savvy sources who were nervous about making themselves a target for police or government-sponsored hackers. They also provided reporters with a set of official processes: recruit discreetly in open spaces and move expeditiously to closed ones for any sensitive conversations. *Encryption* protected closed groups and provided a shorthand ("everything here is encrypted end-to-end") that reporters could use when dealing with nervous sources. And it protected sources from mistakes they might otherwise have made if they did not understand the functionality of other non-encrypted apps (or those where encryption is possible but not the default setting). *Connectedness* refers to two interrelated phenomena: the likelihood that a source could be found on a particular app, and the likelihood of a quick reply. Reporters found that the apps with the highest degree of connectedness were the dominant chat apps in a given locale (e.g., WeChat in mainland China, LINE in Taiwan, WhatsApp in Hong Kong) and that niche security-oriented chat apps (e.g., Telegram and Signal) were often less useful unless reporters were able to find and join specific closed groups. *Flexibility* mattered because apps that allowed for multimedia content (e.g., photos, videos, gifs, and memes) to be embedded into discussions became not only the apps with the most visually interesting materials, but also the communicative spaces most likely to produce newsworthy user-generated content. For example, during the Umbrella Movement, it was within WhatsApp that a video circulated, showing Hong Kong police beating a protester. That video was shared and re-shared via WhatsApp, and proved to be a critical rallying tool for the protest. The final feature, *scalability*, mattered in terms of forming groups. Facebook Messenger allowed for smaller groups than did WhatsApp, and this helps explain why the latter became the default app for protesters, for journalists forming collaborative groups, and for news organizations forming their own internal groups to share documents and edit in real time.

Research question no. 2 asked how journalists understand the features and possibilities of these apps. Using the features of chat apps, journalists were, on the one hand, bound by the spaces and features of these apps and, on the other hand, able to make use of a variety of social configurations. Thus hybridity is a major part of the emerging logic of chat apps. Reporters saw mobile chat apps not in isolation but as extensions of other tools (including social networking sites, especially in the case of Facebook and Facebook messenger, which work in tandem) and as extensions of connections made in particular social contexts. This social fluidity added complexity to how journalists used chat apps and how they engaged with contacts. Sometimes, journalists used chat apps to pursue specific individuals and engage them in conversations on particular topics. In these one-to-one conversations, chat apps offered an encrypted, multimedia version of text messaging, with a user-friendly interface and a communicative culture of short messages and informal

dialogue. In addition to this individual sourcing, there is also a journalistic desire for collective, real-time sourcing that can draw on a variety of existing and potential sources. This is where the scalability of chat apps—in the form of closed groups—attracted many journalists and entire news organizations. In these two modes of use, chat apps have led to a blurring—not between private and public, but of social networks and of the tools available to reporters.

Research question no. 3 asked what power relations have emerged in journalistic usage of mobile chat apps. First, network-based technology applied within institutional contexts can reinforce top-down management (in the form of rules about devices, software, communicative norms, and monitoring of employees using chat apps in their reporting). Second, chat apps can also reinforce the advantages of scale: large news organziations can use closed groups on chat apps to assist reporters who want to share user-generated images, audio, and video files with their verification teams in real-time, without needing to interrupt their on-site reporting. Third, chat apps further enhance the significance and stature of techies within large news organziations: their work is often difficult to understand from the outside, and the more opaque and 'forensic' their work becomes, the more reliant news organizations will become on that work. Fourth, and as a challenge to some of the points listed above, size is not a guarantee of success or better reporting: small teams can operate in a nimble and highly collaborative fashion, bringing together significant multimedia and sharing it with each other. And individual reporters (whether stringers or foreign correspondents covering a region) can form collaborative groups on chat apps, to solicit and share tips, translate words, debunk falsehoods, and pursue new collaborations. Within such groups, there often exists a tension between cooperation and competition, and thus the ensuing dialogue is typically more guarded than in the closed groups formed within larger news organziations. Finally, for a wide range of reporters and news organizations, chat apps enable faster reporting because they bring together multimedia content, as well as short and clipped conversations (rather than the comparatively slow question-and-response format of email). For reporters who can gain access to would-be sources, chat apps thus offer a path of less resistance to a conversation.

Research question no. 4 asked what media logic has developed as mobile chat apps have become normalized in news production. Chat apps have brought with them a lower barrier to communication with sources and contacts generally. Especially in contexts with one dominant chat app (WeChat in mainland China, for instance), reporters can generally assume that people they meet even briefly will use that app and be willing to connect as contacts. After this initial point of contact, new complexities emerge: Reporters need to balance their desire to gain first-hand perspectives and useful data with their ethical responsibilities to make sure they are not

creating risks for sources. They also often need to make use of other communicative tools that offer the appropriate security and functionality for reporting on that story. Thus the arrival of chat apps has not displaced web boards, social networking sites, and other recent-but-no-longer-new media; instead these tools exist in an interplay of conflict and competition, in which conversations initiated on one may migrate to another for a variety of technical, social or institutional reasons. Indeed, the tendency for reporters to look for interesting posts on open web boards and then pursue their authors privately has brought a resurgence, not a decline, in some of these spaces. This interdependence is a key aspect of the hybrd media logic that is being shaped by growing usage of mobile chat apps in news production.

6. Conclusions

This article is based on the concepts of media logic and normalization of new media, and emphasizes the importance of cultural contexts in the ways that communication technology takes root. It has shown that mobile chat apps have enabled both greater connectedness and greater insularity in journalistic contexts, often within the same app. This tension—between open and closed communication, and between trust and a desire for secrecy—has led to the rise of new actors and new forms of mobile social interactions in media work. One such example is digital fixers who can give reporters access to information would have struggled to find without any local knowledge or connections. Digital fixers can help outsiders quickly find sources, translators, surveillance experts, or people with particular connections on chat apps popular in a particular locale. The tasks performed by fixers provide insight into the kinds of challenges journalists face in their reporting. Thus the emergence of digital fixers suggests that chat apps have brought with them a new set of communicative, social, and cultural challenges and that local knowledge remains crucial for reporters seeking sources and facts about fast-moving stories.

It is important to recognize mobile chat apps as a set of media formats that helps organizing and structuring online interactions and audience expectations. The logic of mobile chat apps is entangled with the logic of mass media and social media, for example through the multimedia capacity brought by chat apps (e.g., the ability to use and post content on YouTube through an encrypted chat app). In this sense, the logic of mobile chat apps reflects Chadwick's (2013) hybrid media logic. Mobile chat apps have become essential tools in an increasing range of newswork. But different apps have different features, capacities, limitations, and risks. The reporters interviewed spoke of the deliberate decisions they make when using chat apps, in light of their quest for professional autonomy in media work based on established journalistic norms and practices. While the media logic of mobile chat apps can be constraining, journalists can

interpret the technological capabilities of these apps to match established journalistic norms and practices, and the larger cultural context in which they are situated.

The approach of this research—recognizing the role of media organizations in the social construction of knowledge in society—yielded data showing different sets of interactions and organizational forms on chat apps. It also emphasized the communicative functions of chat apps (e.g., connect to groups on the app or direct information to other platforms). Chat apps also restrict the flow of information, such as with encryption (e.g., Telegram), the creation of private groups (e.g., WhatsApp and others) or public groups (e.g., WeChat), creating insular types of interactions.

As mobile chat apps become further entrenched in processes of news production, there will be a need for new research exploring connectedness and insularity in chat apps. Case studies can shed light on developments in particular contexts, such as coverage of crises and sensitive political reporting, or similarities and differences in practices that grow out of different news organizations' priorities, budgets, norms, and institutional cultures. And looking beyond reporting, future studies can explore how connectedness and insularity factor into social interactions among producers, audiences, and media companies. With chat apps continuing to grow in popularity and gain new features, researchers can continue the work of building new concepts and mobile-oriented theoretical frameworks to understand an emerging and, to date, under-studied mode of communication.

Conflict of Interests

The author declares no conflict of interests.

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Commentary

Conducting Research on the World's Changing Mediascape: Principles and Practices

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Abstract
As digital technology sweeps across the globe, bringing far-reaching changes to the media environment and beyond, international research on the nature and impact of these changes is essential. This commentary situates media research within the broader flow of knowledge and offers a critical perspective on the principles and practices that should guide that research to maximize its potential contribution to both knowledge and to the public.

1. Introduction

A wide swath of emerging technologies is reshaping journalism and media globally. This thematic issue of *Media and Communication* provides a series of international perspectives on the nature and impact of these emerging technologies on journalism, media and society. Within this framework, a series of authors from universities around the world offer critical analysis of four dimensions of the impact of changing technology. These dimensions include aspects related to public engagement (e.g., via social media, mobile technology), shifts in content and user interface (e.g., interactivity, augmented reality, VR, voice-based systems), evolving production methods and professional practice (e.g., the impact of algorithms, automation and AI), and economic and legal/policy implications (e.g., freedom of expression, privacy).

The present commentary critically addresses the theme of public engagement with emerging media through the lens of a unique international study the authors have conducted over the previous three years. This project is a multi-year, multi-country examination of mobile content innovation in Qatar and the United Arab Emirates (UAE), funded by a grant from the Qatar National Research Fund. We collected data using multiple methods and place the findings in an international context. We argue that the design and approach utilized in studies of the nature and impact of emerging technologies can fundamentally shape the potential value of such investigations.

Citizens around the world are highly engaged in mobile and social networking media (Statista, 2019). The role of the increasingly widespread diffusion and public adoption of mobile media may be playing an increasingly significant role in public engagement in social media by

providing a continuously and ubiquitously available platform for creating, accessing and sharing media content and personal communication. The extent to which this trend toward mobile, social media has diffused in the Arabian Gulf, especially Qatar and the UAE, is central to our investigation (Dennis, 2018).

2. Relevance of Qatar and UAE for This Investigation

Qatar and the UAE are especially pertinent platform for such a study. Recent data show that these two countries have the highest Internet penetration in the world, at 99%, and the vast majority of that is via mobile, and social networking, media (Kemp, 2018). Also among the factors making these countries especially relevant for examination are their significant media industries including Al Jazeera, extensive digital infrastructure (they are among the first nations in the world with an operational commercial 5G telecommunications network), and commitment of the country to mobile media use.

Early research suggests the widespread adoption of mobile media in the Arabian Gulf, including Qatar and the UAE, and that this use of mobile is linked to widespread engagement in social media network communications. Our study examines these trends in Qatar and the UAE in 2016, 2017 and 2018, and how they relate to user engagement with content designed for mobile platforms. We draw upon original data from a survey of the Qatari and Emirati national and expatriate populations as well as a sampling of social media posts in Qatar during this period.

Moreover, developments in Qatar and the Gulf region underscore the significant international development of Internet, especially social media usage. Brotman (2018) presents a comparative data on the top countries in terms of the global broadband Internet ecosystem. Among the leaders are the U.S., China, South Korea, Japan, Germany, France and the U.K.

Scholars such as Katz and Crocker (2015) have noted the significance of the confluence of social and mobile media in a digital environment. Among other consequences, this confluence has lead to the growth of user-generated content (UGC), especially "selfies" (user self photographs) and their sharing online. Katz and Crocker (2015) note this trend is an international one.

There has been growing examination of the extent of such UGC in the Arab Gulf, including the intersection of privacy concerns and the sharing of self photographs (selfies) online (Harrell at al., 2017). Consequences of this confluence may extend into other content realms, including news, research suggests, including user engagement with UGC (Dunaway, 2016). Borge-Holthoefer, Muzammil and Weber (2018) have identified even farther-reaching consequences in the Middle East, including political impact. They describe:

Countries with chronic civil unrest in which digital media have largely served as mobilization tools (e.g.,

Tunisia, Egypt), and relatively stable and wealthy societies that face social change and economic hyper-development (e.g., Qatar, Kuwait).

Some scholars (Scolari, Aguado, & Feijoo, 2012) have offered frameworks for beginning to understand and organize the nature of this confluence and its consequences.

Our investigation indicates that mobile media usage is almost universal and is extensive in time and frequency among Qatari and Emirati nationals and expatriates. Only about two percent of those studied say they do not use a mobile device on a daily basis, with little difference between nationals and expatriate professionals. A quarter say they use a mobile device for five or more hours in the prior day, again with little difference between nationals and expatriate professionals. From Year 1 to Year 3 the portion of Qatari and Emirati nationals using their mobile device for five or more hours in the prior day increased substantially, with more than a 20% increase.

In both years, the vast majority (about four-fifths) of those surveyed in both countries say they use their mobile device to access or engage social media in the prior day. About one in ten say they do so for five or more hours per day.

In terms of social media mobile apps, respondents reported heavy usage. Almost all in both years say they use their mobile device to access a social media app in the prior day. Among the most-widely used are Snapchat, Instagram, YouTube and Twitter. It is worth noting the conspicuous absence of Facebook among the most-used platforms. Facebook is less popular because it requires users to share personal information, including photographs, in a public manner, whereas the others do not.

Immersive experiences such as AR and VR rely on mobile devices such as handhelds or wearable headsets for full engagement. Overall, more than half of the Qatari and Emirati citizens surveyed express interested in sharing their AR experiences, generated or accessed via mobile devices, through social networking media. Arab expatriate residents living in Qatar and the UAE show a similar pattern, while non-Arab expats express a slightly lower likelihood of doing so.

With regard to sharing VR experiences, more than half of each group and in both years say they are likely or highly likely to share their VR experiences. More than half of nationals and non-Arab expats say they are likely to share their VR experiences via social media. A slightly higher portion, almost two-thirds of Arab expats say they are moderately or very likely share their VR experiences via social media.

In general, these findings largely parallel trends in mobile and social media usage in much of the developed world, including countries in North America, Europe and in much of Asian, including South Korea, Japan and China, although precise patterns vary widely by individual country (Poushter, Bishop, & Chwe, 2018). Although our findings confirm the wider pattern of mobile and social me-

dia engagement seen around the globe, as we have theorized, specific trends and tendencies are also shaped in significant ways by the unique local or regional culture and associated values and media behaviors (e.g., Qataris and Emiratis are heavy users of social media especially via mobile media, but have preferences for particular platforms that align with their cultural norms).

3. Implications for Future Research on the Changing Mediascape

Fueled by rapid technological change, the world's media landscape is undergoing far-reaching and dramatic disruption. These changes include an increasingly mobile, networked, and wearable media platform featuring a host of new and innovative content and communications capabilities, including augmented and virtual reality. As this commentary has shown, this changing media landscape is bringing with it substantial consequences, including in the realm of public engagement via mobile and social media in Qatar and the UAE.

Four principles are critical to the advance of research on the development and consequences of emerging media technologies. First, the theoretical foundations of such investigations are the cornerstone of the field. Scholars should emphasize the conceptual engagement with the literature as a means to challenge, question and reimagine the field and ensure the enduring relevance of their research.

Second, international and intercultural comparative research is vital to the increasingly global media environment. Such comparative investigations can help frame media research, especially that driven by technological inquiries, in a broader context.

Third, emphasis on critical questions examining with skepticism the nature and consequences of a rapidly changing media landscape will maximize the potential value of media research. Avoiding technological evangelizing is essential in an environment where commercial forces, threats to privacy and security, and ownership of data especially in digital form are increasingly acute.

Four, collaborative research is increasingly essential in conducting this research. Collaboration has the greatly potential to bring together scholars of diverse, complementary backgrounds and perspectives. Whether blending theoretical and methodological expertise, such collaborative approaches to international, theoretically driven investigations of the evolving mediascape can heighten the potential for generating both valid and reliable investigations. Perhaps most importantly, collaborative research that cuts across boundaries both geopolitical and disciplinarily has the best capacity to situate the investigation into the changing media environment culturally and contextually.

The articles that follow in this special issue bring this altered and altering media environment into sharp relief in some half-dozen locations around the globe and highlight the principles outlined above. Through theoretically grounded empirical research investigation, these articles offer a systematic lens through which students and scholars of media can critical engage in a vibrant analysis of the rapidly shifting environment of mediated communication in the 21st century.

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Conflict of Interests

The authors declare no conflict of interests.

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